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AFRICA PILOT

PART III.

SOUTH AND EAST COASTS

1878.

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THE
AFRICA PILOT,
PART III.

SOUTH AND EAST COASTS OF AFRICA

FROM THE

CAPE OF GOOD HOPE TO CAPE GUARDAFUI,

INCLUDING

THE ISLANDS IN MOZAMBIQUE CHANNEL.

ORIGINALLY COMPILED

BY CAPTAIN ALGERNON F. R. DE HORSEY, R.N.

THIRD EDITION,
WITH AN APPENDIX.

PUBLISHED BY ORDER OF THE LORDS COMMISSIONERS OF THE ADMIRALTY.

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TO THIRD EDITION.

The third edition of the Africa Pilot, Part III., comprises sailing directions for the east coast of Africa, between the cape of Good Hope and cape Guardafui, including the islands in Mozambique channel.

The surveys and directions for the coast between the cape of Good Hope and port Natal are by Captain Dayman, Commander Simpson, and Nav. Lieutenants Skead and Archdeacon, R.N. For the coast between Rás Pekawi and Kiswere by Lieutenant Gray, H.M. Ship *Nassau*, 1874–75. For the islands and channels of Mafia and Zanzibar, and the coast from Songa Manara island to Pangani bay by Commander Wharton, H.M. Ships *Shearwater* and *Fawn*, 1874–77.

The description of the remaining parts of the coast are derived from the surveys of the late Captain W. F. W. Owen and of Commander Wharton; from the observations of Captain de Horsey; the remark books of officers of H.M.Ships, and other documents in the Hydrographic Department, Admiralty.

The longitude of places given in the text of this work between the cape of Good Hope and Delagoa bay depend upon Cape observatory being in 18° 28′ 45″ E. of Greenwich. The longitudes between Delagoa bay and Kisimayu (Refuge bay), together with the islands in Mozambique channel depend upon Zanzibar (British Consulate) being in 39° 11′ 11″ E. Between Kisimayu and cape Guardafui the longitudes depend upon Aden (telegraph office) being in 44° 58′ 32″ E. of Greenwich.

This edition has been revised by Commander James Penn, R.N. late of the Hydrographic Department, Admiralty.

F. J. E.

Hydrographic Office, Admiralty, London,
November 1878.

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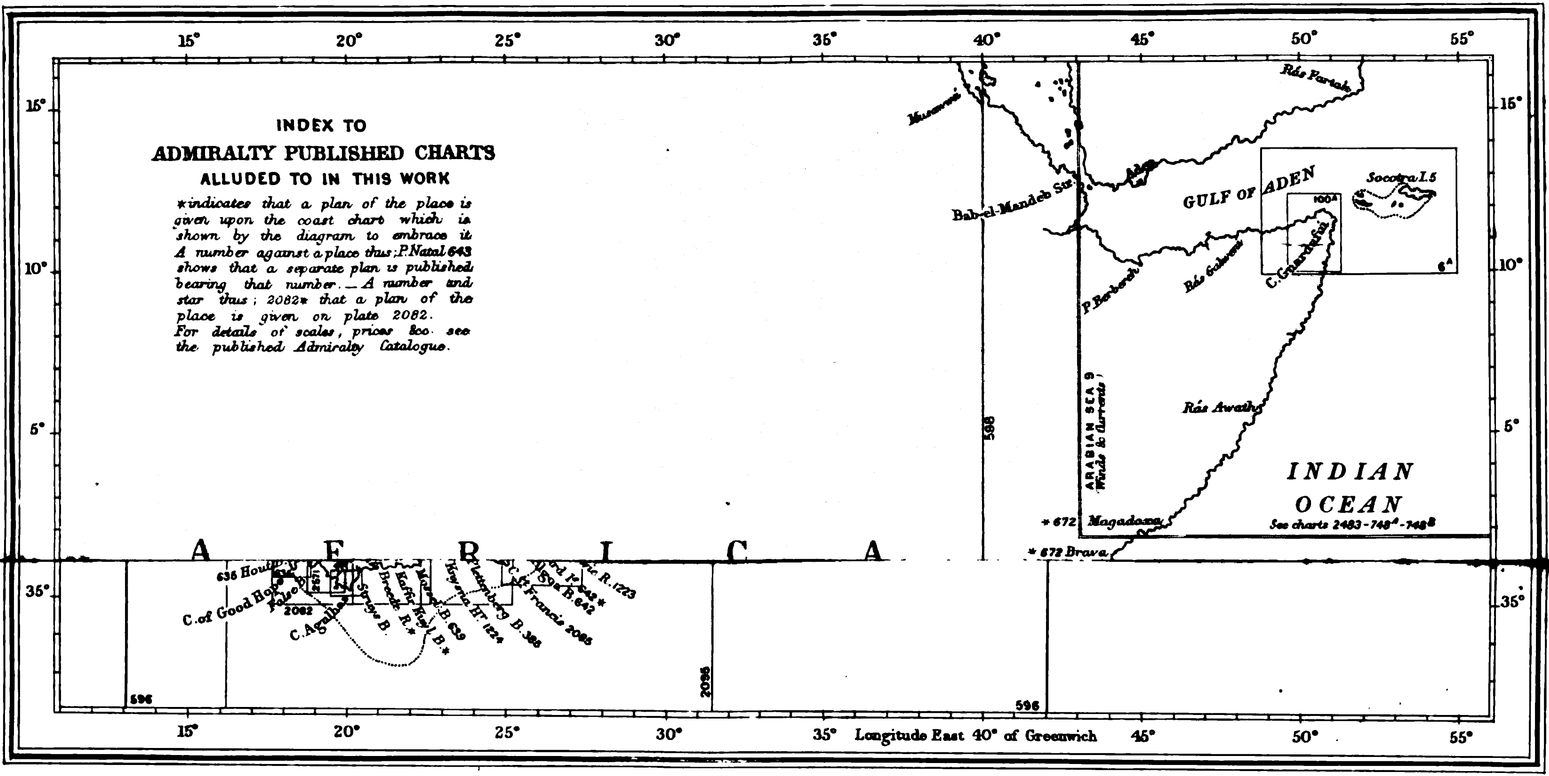
**IN THIS WORK THE BEARINGS ARE ALL MAGNETIC,
EXCEPT WHERE MARKED AS TRUE.**

**THE DISTANCES ARE EXPRESSED IN SEA MILES OF 60 TO
A DEGREE OF LATITUDE.**

**A CABLE'S LENGTH IS ASSUMED TO BE EQUAL TO
100 FATHOMS.**



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✱ indicates that a plan of the place is given upon the coast chart which is shown by the diagram to embrace it. A number against a place thus; P. Natal 643 shows that a separate plan is published bearing that number.—A number and star thus; 2082✱ that a plan of the place is given on plate 2082. For details of scales, prices &c. see the published Admiralty Catalogue.

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THE

AFRICA PILOT.

PART III.

CHAPTER I.

AGULHAS BANK, CURRENTS, WINDS, WEATHER, &c.

AGULHAS BANK.—The limits of this extensive bank of soundings have been fairly defined. The 100-fathoms line appears to run from near the shore in the vicinity of the Bashee river—lat. 32° 15′ S., long. 28° 55′ E.,—to the south-westward, passing cape Recife, Algoa bay, at about 20 miles distant, and continuing on till near the meridian of Mossel bay, where, at 60 miles from the land, it trends southward, reaching its outer limit in latitude 36° 40′ S., long. 20° 45′ E., thence it inclines to the northward in a north-west (true) direction, passing the cape peninsula at a distance of 9 or 10 miles.*

Although the above position is assigned as the southern limit of the 100-fathoms line of soundings, the bank extends farther to the eastward as in the above parallel and long. 21° 30′ E., soundings of 320 and 348 fathoms will be found, and nowhere does the edge of the bank appear to be very steep. The general soundings on the bank are from 40 to 80 fathoms.

To the eastward of Agulhas the bottom is generally rocky, or coarse sand, shells, and small stones, whilst to the westward of Agulhas mud or green sand will be found southward of lat. 35° 15′, but within 50 fathoms the soundings are rock, sand, or stones, and beyond 90 fathoms generally sandy with black specks. The quality of the bottom is not, however, sufficiently ascertained to enable seamen to determine their position by it.†

---

* *See* Admiralty chart :—Hollams island to cape Corrientes, including the cape of Good Hope, with plans, No. 596, scale d = 1·4 inches; and Hondeklip bay to port Natal with the Agulhas bank, No. 2,095, scale m = 0·05 inches.

† There is good fishing at times on the bank. H.M.S. *Tamar*, in October 1871, lat. 35° 28′ S., long. 20° 53′ E., hove-to in 50 fathoms, sand, and caught about one hundred large fish, the heaviest weighing 72 lbs.

The AGULHAS CURRENT is formed by two converging streams: a branch of the great mass of water which flows westward from the southern Indian ocean and round the north end of Madagascar strikes the coast of Africa near cape Delgado(in lat. 11° S.) where it divides, one part setting northward,* the other flowing southward along the coast of Africa through the Mozambique channel. Another and larger branch of the current from the southern Indian ocean flows past the south end of Madagascar, and uniting with the stream from the Mozambique between the parallels of 28° and 30° S. forms an enormous body of warm water, which runs to the south-west and westward, skirting the coast of Africa at from 3 to about 120 miles off, and attaining considerable velocity between port Natal and the meridian of about 23° E., at times running 3 or 4 miles an hour, its greatest strength being near the edge of the bank.†

The current in its progress to the south-west becomes weaker, and on reaching the Agulhas bank, does not, as a rule, run over the bank, but follows its contour or edge with a tendency to branch off, and in long. about 22° E., the main body is deflected to the southward and a large part recurves to the eastward, thus flowing back into the Indian ocean, but with diminished strength and temperature, and as far as the parallel of 40° S.‡

A small portion of the Agulhas current passes round and over the southern part of the Agulhas bank, and branching off to the north-west, is joined by the easterly or "connecting" current of the South Atlantic ocean, collectively forming a wide stream running to the north-west, at the rate of one or 1½ miles an hour, which is perceptible as far as the parallel of 25° S.

In the summer season (January—March) the warm water of the Agulhas current appears to be pushed a considerable distance to the westward, (as far as the longitude of about 10° E.,) the stream at this time attains its maximum strength and volume. In the winter season (July—September) the current diminishes in force and extent, and the cold water from the higher latitudes easily repels and permeates it.

---

* During the S.W. monsoon this northerly set continues along the coast until deflected to the north-eastward by cape Guardafui. During the N.E. monsoon the northerly set is met near the equator by the N.E. drift from the Arabian sea which sets to the southward along the coast at this period. For description of the currents between cape Delgado and cape Guardafui, *see* p. 165.

† H.M.S. *Ocean*, 8th March 1872, at noon, in lat. 33° 59′ S., long. 23° 33′ E., experienced during the last 24 hours, between Buffalo river and Algoa bay, a current setting S. 50° W. 114 miles. This remarkable current was not only ascertained by observations, but also by bearings of the land at noon on the 7th and 8th. On the afternoon of the 7th a heavy swell from the southward.—James Cole, Nav. Lieut.

‡ *See* Admiralty chart of the stream and drift currents of Atlantic and Indian oceans.

Temperature of the Agulhas current in:—	Spring.	Summer.	Autumn.	Winter.
Off Natal - - - - -	71°	76°	75°	70°
Off Algo bay - - - - -	69°	74°	73°	61°
S.E. of Agulhas bank - -	65°	71°	69°	65°
Meridian of cape Agulhas - -	63°	68°	67°	61°

Bands of warm and cold water are found at all seasons, extending south as far as the parallels of 42° and 44°; but the space included between the parallels of 36° and 38° S. and the meridians of 22° and 26° E. is that where the violence of the conflicting currents of cold and warm water, and cold and warm air appear to be central.

Although the southern edge of the Agulhas current has a tendency to set from the land, the northern edge on the contrary has a tendency to set *towards* the land, more especially to the westward of Algoa bay, where during and after south-east, westerly, and north-westerly gales, the current is at times deflected from its general course and turned directly towards the land, causing a very dangerous element in the navigation of the south-east coast of Africa, if disregarded and not allowed for.

From this cause a large number of valuable vessels have been wrecked, more especially between Algoa bay and cape Agulhas, and it cannot be too strongly impressed on those in charge of vessels proceeding along this coast, the necessity of guarding against this insidious danger.*

The velocity of the current is said to be checked at times by westerly gales and to run with increased strength afterwards, but it usually runs in the very teeth of the gale, causing a dangerous high sea, though it may be deflected from its ordinary course.

Agulhas Counter Current.—The remarkable recurving of the main body of the Agulhas current is due to the action of a polar or cold water current flowing from the south-west; the junction or intermingling of the hot and cold waters of the two streams notably taking place off the Agulhas bank, giving rise to the troubled and confused sea, the irregular and uncertain set of the currents, and by their effect on the atmosphere to those severe and fitful gales so well known to seamen rounding the cape of Good Hope. The meeting of the cold and warm currents is frequently denoted by a broken, confused, and heaped-up sea, the warm current is also indicated by a marked change in the colour of the water. This change of colour, combined with the agitation of the sea, frequently conveys the impression that the ship is in soundings.

The large body of water deflected and turned to the eastward runs chiefly between the parallels of 37° and 40° S., and though its strength is variable its average rate may be about 1½ miles an hour. It becomes more extensive than the Agulhas current and to the eastward of the meridian of 26° E., it is traced northward to about lat. 35½° S. On one occasion, when H.M. ship *Brisk* was proceeding eastward in lat. 39° S. the vessel experienced a current of 3 miles an hour (or 71 miles in the 24 hours) in her favour, the wind being fair also, but a heavy sea caused the ship to pitch so heavily as to necessitate running under close reefed topsails although the wind was moderate.

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* Altogether about 40 vessels have been wrecked during the last 25 years.

Inshore Counter Current.—Near the land there is frequently an easterly set.—Between capes Hangklip and Agulhas, H.M. ship *Hydra* had on two occasions an E.S.E. current of a mile an hour. On the extent of coast between cape Agulhas and Kowie river on the meridian of 27° E., a current setting eastward is frequently experienced in fine weather, and except off the mouths of the river it follows the trend of the land and is said to extend off shore from one to 6 miles.*

Barometer.—The average range of the barometer in the higher latitudes between 50° and 60° is about 1·5 inches, but on extraordinary occasions ranges of 2·75 and 3·0 inches have been recorded.

In the intertropical regions the range varies from 0·4 to 0·2 inches, and in the neighbourhood of the equator it seldom exceeds 0·15 inches, this small change being in great measure due to the regular diurnal variation. The average movement of the barometer within the tropics being thus confined within small limits, any interruption of the law may be deemed a warning of the approach of bad weather.

The fall of the barometer in hurricanes ranges from 1·0 to 2·0 inches and even 2·5 inches, the rapidity of the fall and the depression of the mercury increases as the centre of the storm approaches.

In the southern hemisphere the effect of the veering of the wind on the barometer is according to the following law:—

With East, N.E., and North winds the barometer falls.
„ N.W. winds the barometer ceases to fall, and begins to rise.
„ West, S.W., and South winds the barometer rises.
„ S.E. winds the barometer ceases to rise, and begins to fall.

In the northern hemisphere the effect of the veering of the wind on the barometer is according to the following law:—

With East, S.E., and South winds the barometer falls.
„ S.W. winds the barometer ceases to fall, and begins to rise.
„ West, N.W., and North winds the barometer rises.
„ N.E. winds the barometer ceases to rise, and begins to fall.

WINDS and WEATHER off the CAPE.—From September to May (the Cape summer) the prevailing winds are south-easterly, which occasionally rise to gales, and last for three days, and at times for a longer period, being followed by calms and light westerly winds. Eastward of cape Agulhas the winds are steady from S.E. by E., but to the westward they follow the trend of the land, and in False bay blow at S.S.E. ½ E. In strength the south-easters are singularly local at times; for instance, the wind being light at cape Hangklip and Danger point to the south-eastward, when it may be blowing a heavy gale from the same quarter in Simons and Table bays.

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* For detailed description of inshore local currents, *see* pp. 47, 52, 83, 100, 112, 125, 132, 140.

Although September to May is the season of south-easters, westerly winds and heavy westerly gales occur occasionally throughout the year and are not unfrequent in September, October, and April, but the best chance of avoiding them is to keep well in with the land.

From May to September (the Cape winter) westerly winds prevail, with occasional breezes of short duration from the S.E. During this season westerly gales are frequent, and are most severe in the months of June, July, and August. These gales generally begin at West, and back to N.W. or North, veering again to the westward, and eventually blowing fine at S.W.

If when running with an easterly wind it should shift to N.E., be prepared for bad weather, particularly if there be lightning in the N.E. or N.W.; but, although the glass falls, bad weather may not come immediately, as the barometer always stands lower with northerly winds in south latitudes. If, however, the glass falls, and heavy dark clouds gather in the west, prepare quickly for bad weather, notwithstanding the wind may be easterly and the sky clear overhead: under these circumstances ships have frequently barely time to take in the light sails, and close reef the topsails, before they are taken aback from the N.W., and a heavy gale commences. This has occurred to many vessels, particularly in the longitude of Algoa bay, and was the supposed cause of the foundering of H.M.S. *Nerbudda*, with all hands, in 1855.

Ships proceeding to the westward between May and September should be well found, and able to encounter a succession of gales. The best plan is to endeavour to keep in the strength of the Agulhas current, carrying low sail; but from September to May it is better to keep more inshore, where there is less likelihood of encountering a westerly gale. The sea is always smoother when well in on the bank.

Ships proceeding to the eastward between September and May are generally obliged to go southward to lat. 39° or 40° S., in order to get westerly winds and a favourable current, but between May and September, when westerly winds prevail, if bound to any of the eastern ports, they can frequently coast along inside the current, at least as far as cape St. Francis, but there the current must be encountered.

The severity of the gales off the cape of Good Hope and the adjacent coast to the eastward, and especially in the neighbourhood of the Agulhas bank is well known to navigators, as also the rapidity with which they succeed one another, and their violence during the winter months (June to September).

Modern investigation has proved that the greater number of these westerly gales are circumscribed in their limits, thus partaking of a local character: as their movement is progressive from west to east, the ships which are to the west feel the effect first, and those which are nearest to the coast have the wind less strong than those to the south, or if they do experience the full strength of the gale, it is of short duration. It therefore frequently happens that the gale which is blowing at sea for a lengthened period, is either moderate, or not felt near the coast. The proportional values of the increasing numbers of gales in the several parallels of latitude southward of the coast has been found as follows:—For every gale that blows between 33° and 34°, 1·3 blows between 34° and 35°, 1·8 between 35° and 36°; and 2·7 between 36° and 37°.

From one year's observations made in the usual tracks of homeward bound ships from the meridian of port Natal to 16° E. the proportion of westerly gales to easterly was found to be as 18·5 to 1·0. That February was the most favourable month; July and August the most unfavourable for sailing westward; that in spring (October—December) and in autumn, (April—June,) gales are nearly equal in number; and that in the winter season (July—September), the number of gales are three times greater than in summer (January—March).

The greatest number of gales are experienced between the meridians of 22°–24° E., and the parallels of 35°–37° S., or where the Agulhas current is deflected to the southward by the eastern margin of the Agulhas bank, and the struggle takes place between the cold and warm currents of the sea, and the cold and warm currents of the air which go as it were hand in hand. This remarkable and interesting feature is shown by the following table which represents the relative number of gales between the meridians of 16° and 31½ E., and the parallels of 33° and 37° S.

Assuming that one gale blows between 32° and 30°:—

Then between	30°	and	28°	1·26	gales blow	Then between	22°	and	20°	1·38	gales blow
„	28°	„	26°	1·64	„	„	20°	„	18°	1·06	„
„	26°	„	24°	1·70	„	„	18°	„	16°	0·96	„
„	24°	„	22°	1·83	„						

It has been found that when during summer the barometer falls to 29·50 bad weather may be expected, and during winter that a fall to 29·75 will indicate a similar change.

ICEBERGS, are rarely fallen in with off the cape of Good Hope to the northward of 40° S. Nevertheless, there are instances of icebergs being seen off the cape, and it is therefore desirable to keep a good lookout for them.*

The Spanish ship *Constancia*, during her homeward voyage from Manila, on April 7th 1828, fell in with a cluster of eight icebergs in lat. 35° 55′ S., long. 17° 51° E. of Greenwich. Some of them were small but one was of a square form, apparently 170 or 180 feet each way.†

The brig *Eliza*, Captain Jucometti, outward bound from Antwerp to Batavia, fell in with five icebergs in lat. 37° 31′ S., long. 18° 17′ E. of Greenwich. She passed within a quarter of a mile, and described them as 250 or 300 feet high.

It is remarkable that these icebergs were seen in April, which is the autumn of the southern hemisphere, whereas in northern latitudes icebergs are usually observed to drift farthest to the southward in spring. This, and the rarity of the occurrence, led to the inference that they had come from a great distance, having been detached from the ice regions in the southern spring, and having taken the whole summer to reach the vicinity of the cape of Good Hope.‡

Several icebergs were seen in 1840 between latitudes 37° and 37° 40′, and longitudes 12° to 12° 36′ E.§ ; and numerous others in September 1844, on the meridian of 24° E., between the parallels of 37° 15′ and 38° 10′. The locality where these icebergs were severally seen is marked on the Admiralty chart of South Africa from Hondeklip bay to port Natal, No. 2095.

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* *See* Admiralty Southern Hemisphere Ice chart.

† Don Pedro Medina y Correa, ship *Constancia*.

‡ The navigator should be aware that, practically speaking, only about one-eighth of the mass of the ice appears above water.

§ Nautical Magazine.

CHAPTER II.

TABLE BAY TO CAPE AGULHAS.

VARIATION IN 1878.

Table bay - - 30° 15′ W. | Cape Agulhas - - 30° 20′ W.

ROBBEN ISLAND.—This island lies 25 miles about S. ¼ E. of Dassen island, and nearly 5 miles N. by E. ½ E. from Green point, the northern extremity of the cape peninsula, and forms an admirable landmark for the northern approach to Table bay. It is low, flat, nearly 2 miles in length N.N.E. and S.S.W., and a mile in breadth. The island is bounded by reefs which project fully a cable off its western side; but rocky ground, with from 5 to 10 fathoms water over it, extends westward a mile from its western extreme, and on which the sea breaks heavily during strong breezes from S.W. to North. This rocky ground rises suddenly from depths of 25 and 30 fathoms.*

The north-east side of the island is free from danger, but the east and south shores are fronted by rocky ground with irregular soundings varying from 2 to 4 fathoms, and marked by an abundance of sea-weed. The 5 fathoms line of soundings on the east and south sides is from about 3½ to 6½ cables from the shore.

Landing.—There is a jetty on the south-east side of the island for the convenience of the lunatic establishment, and there is also good landing on the north-east side, in Murray bay.

LIGHT.—On Minto hill, the highest and southernmost elevation on Robben island, is a lighthouse, 76 feet high, of a cylindrical form, painted white. It exhibits, at an elevation of 154 feet above high water, a *fixed* white light, which in clear weather should be seen from a distance of 20 miles.

Whale Rock, upon which the sea breaks, except when very smooth, or at high water, lies S. by W. ¼ W. 1 3/10 miles from the lighthouse on Robben island, and one mile from the south extreme of the island. The vicinity of this danger is distinguished by sea-weed, which adheres to the rocky bottom, and the least water on the rock is probably 6 feet. Between the rock and the 3-fathom line off Robben island, there is a passage 6½ cables wide, with depths varying from 3¼ to 8 fathoms, rocky bottom; but this channel should never be attempted by sailing vessels, except in case of emergency, as the currents are at times strong and uncertain in their direction about the rock.*

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* *See* Admiralty charts:—Cape of Good Hope and False bay, with views, No. 636, scale, *m* = 0·85 inches; plan of Table bay, No. 1,920, scale, *m* = 2·8 inches; and Table bay to cape Agulhas, with views and plans of Table and Simons bays, No. 2,082, scale, *m* = 0·3 inches.

Anchorage.—There is temporary anchorage on the north-east side of Robben island, sheltered from winds from W.S.W. to N.W. The best position for a large vessel is with the Whale rock (upon which the sea almost constantly breaks) open to the eastward of the south point of the island, bearing S.W., and the north extreme of the island, N.W. ½ N. or N.W. ¾ N., in 8 or 9 fathoms water, sandy bottom. In this position H.M.S. *Hermes* rode out with ease a heavy south-east gale, and without undue strain on her cable. Smaller vessels will find excellent shelter on the above bearing of the northern extreme of the island, and with the Whale rock shut in by the south-east extreme of the island, S.W. ¾ S., in 5 and 6 fathoms. Closer to the shore than this, the ground is rocky. When at anchor, Murray bay, which has a sandy beach, and where landing can be effected, will bear between W. by N. ¾ N. and W. by N. ¼ N.

Blaauwberg is a dark round hill rising to an elevation of 745 feet, at 1¼ miles inland from the main shore opposite Robben island. It bears E. ¾ N. 5¾ miles from Minto hill, and may be considered the northern boundary of the approach to Table bay. The distance between Blaauwberg beach and Robben island is about 3¼ miles, but the channel is narrowed to about 2¼ miles wide, and carries from 6 to 11 fathoms.

Salt River.—To the southward of Blaauwberg the shore for 2 miles is composed of a number of white sand hills, 100 to 192 feet high; it then gradually curves to the south-westward for 6 miles, to the mouth of Salt river. The whole of this space is very deceptive to vessels standing into the bay at night or in hazy weather, from the close resemblance the sand bears to the water. From this cause, in former days, many vessels, *disregarding the lead*, have been stranded or wrecked midway between Blaauwberg and Salt river.

The mouth of Salt river, which is fordable in summer, but dangerous in winter, being an extensive quicksand in which both men and cattle have perished, is in the south-east bight of Table bay, and S.E. ¾ S. 2 miles from the Breakwater lighthouse. Another winter mouth to the river is formed E. by S. ½ S. $2\frac{8}{10}$ miles from the lighthouse, and fronted by a rocky reef with 3¾ to 5 fathoms water over it, at the distance of nearly three-quarters of a mile from the shore. The sea breaks over this spot after heavy N.W. gales; with this exception, the water shoals regularly from 8 fathoms to the sandy beach between Blaauwberg and Salt river. There is nothing to distinguish the winter mouth, but Salt river has a large white farm-house close to its entrance.

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* Chap. II. of this volume being in part identical with a portion of Chap. VIII. of the Africa Pilot, part II., the reader should consider which book contains the latest information.

A range of tolerably even mountains, called the Tygerberg, 1,350 feet high, and 6 miles in length, extends N.N.E. and S.S.W. 5 miles within the eastern sandy shore of Table bay. With the exception of Blaauwberg, these are the only elevations in the neighbourhood of Table bay north of Table mountain.

The CAPE COLONY.—The cape of Good Hope, properly so called, is a promontory near the south-west extremity of the continent of Africa; but the extensive colony of that name is washed by the waters of the South Atlantic and Indian oceans on the west and east. It is bounded on the north by the Orange or Gariep river; on the north-east by the territory of the Basutos; on the east by Kafirland. The population of the cape colony amounts to 883,000; and in the year 1875 the value of imports amounted to 5,762,743*l*., and that of exports to 4,393,320*l*.

The cape of Good Hope was discovered in 1486, by Bartholomew Diaz, who named it Cabo Tormentoso, or Stormy cape; but King John II. of Portugal, convinced of its being the turning point of the long-desired route to India, gave the name of Boa Esperança, or cape of Good Hope; his convictions were confirmed eleven years after, by Vasco de Gama, who then rounded the cape. In 1620, two English East India commanders, by a proclamation dated from Saldanha bay, took possession of the cape in the name of Great Britain; but no settlement was formed.

In the year 1652 the territory was colonized by the Dutch East India company, under Van Riebeck, and continued in their possession until 1795, when the British government took possession, but at the peace of Amiens in 1802, the colony was ceded to its former possessors. In 1806 it was again taken by the English; confirmed at the general peace in 1815, and has since continued a British colony.

The climate of the cape is favourable to people of European birth; the temperature at Cape town, by tables compiled from observations during twenty years made by Sir Thomas Maclear, the Astronomer Royal at the cape observatory, is shown to be less variable than in most countries. The average temperature in winter is only about 15° below that of summer. The mean temperature throughout the year is 62°; the maximum being 97°, and the minimum 38°. The summer may be said to commence in November, and continue until April.

The cape may be said to possess a healthy climate, which is doubtless attributable to the absence of great climatic fluctuations.

The settlers of the cape are chiefly employed in the production of wool and wine; in the breeding of horses, cattle, and sheep; and in the growth of wheat, barley, oats, and maize. As the interior of the country is opened out by the various railroads, a stimulus is given to all industrial pursuits, and the resources of the country are being fully developed and facilities of transport afforded for the produce of the interior.

Cape Town, the capital of the colony, and the seat of government, stands on the western shore of Table bay, between it and the foot of Table mountain, and is well laid out, with numerous public buildings and several good squares, and a population of 35,000.

In 1875, 797 vessels amounting to 429,139 tons entered inwards, foreign and coastwise; and 781 vessels amounting to 433,382 tons, cleared outwards, foreign and coastwise. In the same year, the value of the imports was 2,144,750*l.*; and that of the exports 690,454*l.*

In addition to the regular mails for England,* the mail packet leaves Table bay every month for port Natal, Delagoa bay, Inhambane, Quilimane, Mozambique, Zanzibar and Aden, and vice versâ.

The Cape Peninsula is a remarkable promontory extending about 28 miles north and south, and from 5 to 8 miles in breadth, with a varying height from 3,550 feet at Table mountain, and 3,200 feet at Constantia berg, to but a few feet above the sea between Fish Hook bay on the east and Chapman bay on the west; which low land, however, is only visible on particular bearings. The neck of land connecting the peninsula on its north-east side with the main, and extending from Table bay to the head of False bay, is low, and about 11 miles across.

The cape peninsula is rocky and barren, with a stunted growth of trees here and there; the fertile valleys, however, in the vicinity of Constantia and Wynberg are pleasing exceptions. From the westward the peninsula appears high and rugged from Table mountain to within 4 miles of the cape of Good Hope, where the mountain chain terminates at Paulsberg, which rises north of Buffals bay, on the east side of the peninsula. From Paulsberg to cape point the land is elevated and even, with the exception of two peaks at its southern extremity, which at a considerable distance make like a saddle island.

Soundings westward of the Cape.—The offing westward of the cape peninsula has not been thoroughly sounded; but from what has been done, it appears that at 4 miles from the shore there is no bottom at 40 fathoms, and off the high land north-west of Hout bay there is none at 40 fathoms at 1½ miles off shore. From Hout bay to the cape the water is less deep: the soundings varying from 24 to 10 fathoms, rocky bottom, at from one to 2 miles off shore. With the Whittle beacon bearing S.E. by E., 1¼ miles from the shore is a rocky bank with 10 and 11 fathoms water, and on which the sea breaks in bad weather. *See* page 25. The precaution, therefore, of using the lead when approaching the cape should never be omitted if doubt exists as to the accuracy of the vessel's position.

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* The Union Company's steamship *German*, leaving Table bay on October 1st, 1878, made the passage to Plymouth, calling at St. Helena and Madeira, in 20 days 2 hours, including 9½ hours detention at intermediate ports; the fastest passage yet made.

TABLE BAY is an indentation on the north side of the neck of the Cape peninsula, about 3¾ miles wide at its entrance between Whale rock and Green point, and sufficiently commodious to accommodate a fleet of the largest ships. It may be easily known by the appearance of the contiguous high land, which, when seen from a long distance at sea, appears like an island.

The bay derives its name from Table mountain, a remarkable and gigantic mass of quartzone sandstone, rising to an elevation of 3,550 feet at the south part of the bay immediately over Cape town. The mountain, which rests on a granite base, 500 feet above the sea, is level on the top, and falls nearly perpendicularly at the east end, till it joins Devils peak, which is a rugged peaked mountain 3,270 feet high, and separated from the former by a gap. The west end of Table mountain is also nearly perpendicular from its summit to a considerable distance, and is then united by an abrupt declivity with the base of a conical mountain called Lions head, which is about 2,180 feet high, and is in some places so steep, that it can only be ascended by steps cut in the rock.

From the north side of Lions head a rounded ridge extends to the north-east, where it reaches an elevation of 1,150 feet, and is known as Lions rump, upon which is a signal station. The two latter overlook the western shores of the bay, and their western sides face seaward. On the east side of Table mountain and Devils peak, lies the low sandy isthmus between Table and False bays. From Table mountain towards the south extremity of the cape peninsula the land is high and uneven.

Breakwater and Docks.—About midway between Mouillé point and Amsterdam battery to the north of Cape town, a breakwater extends 617 yards in a north-east true direction from the high-water line, terminating in a depth of 32 feet at low-water springs.*

At the inner end of the breakwater, on the south side, is the outer basin, 850 feet long, 263 to 380 feet broad, with an entrance 200 feet wide. The depth at low-water springs close up to the east jetty is 18 feet, gradually decreasing to 7 or 8 at a distance of 50 feet off the western side of the dock; at the entrance there is a depth of nearly 21 feet.†

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* It is proposed to extend the breakwater about 1,100 feet farther out, in an E. by N. (true) direction; this would afford protection to the inner part of the bay from the dangerous N.N.E. gales, against which the present breakwater gives no shelter.

† *See* Admiralty plan of Table bay, breakwater, and docks, No. 123; scale, *m* = 30 inches.

The inner basin is to the southward of the outer, and to enter it a vessel has to cross the south end of the latter, and then pass between two jetties for a distance of about 100 yards; this passage is from 100 to 120 feet wide. The inner basin is 1,000 feet long, 400 to 450 feet broad for two-thirds of its length from the north quay, the remaining portion is only 250 feet wide. There is an uniform depth of nearly 21 feet at low water springs in the passage from the entrance to the outer basin to the entrance of the inner, and inside the basin 24 feet over the whole of the northern part, decreasing to 19 and 20 in the southern portion. The basins are connected by a railway with Cape town.

There is a patent slip at the south end of the inner basin, which is capable of taking a vessel of 1,500 tons on it. Extensive warehouses and sheds, with cranes, &c., are erected around the basin; and a large smithy and factory are available for engine repairs.

The construction of a dry dock at the north-west angle of the inner basin is also contemplated; its principal dimensions are intended to be about 380 feet long, and 65 feet wide at entrance.

Dock Charges.—A vessel entering the dock or basin, with the privilege of remaining therein for 30 days, including the day of arrival and departure, is charged at the rate of sixpence per each registered ton; and for every week or portion of a week after the above period, at the rate of one penny per registered ton.

Supplies of all sorts can be obtained at Cape town, and biscuit, when required in large quantities, will be baked for the occasion. Repairs equal to all ordinary requirements of ships can be effected here, and spars are to be purchased. There are several water-tanks in Table bay for the convenience of shipping; the water is excellent and abundant, and will be brought alongside upon application without delay, and at a moderate charge. Coal is to be obtained in abundance. It is brought alongside in lighters, containing each about 20 tons, at a charge of from 45 to 60 shillings a ton. There is a contract for coaling men-of-war.

LIGHTS.—At the extremity of the breakwater is a *fixed green light* at an elevation of 25 feet above high water, and visible when bearing from S. by W. round westward to North. The light will not be seen from vessels until eastward of Mouillé point light.

Green Point.—A lighthouse stands upon Green point, the western extreme of Table bay, at 400 yards within the rocks at low water. It is a rectangular building, 52 feet high, and exhibits, at 65 feet above the sea, a *white* light showing a *flash every ten seconds*, and visible in clear weather from a distance of 13 miles.

Mouillé Point.—From Green point the land trends E. by S. ½ S. to Mouillé point, the north-west horn of Table bay, upon which there is another lighthouse, at 100 yards within low water mark and about

6 cables from Green point. This lighthouse is cylindrical, 30 feet high, painted in alternate red and white bands, and exhibits at an elevation of 44 feet above the sea, a *fixed red* light, visible in clear weather from a distance of about 10 miles.

A small *fixed green* light is exhibited during northerly gales, from a position a little to the southward of the inner part of South wharf.

Tides.—It is high water, full and change, in Table bay at 2h. 40m.; springs rise 5 feet, neaps 3½ feet. The duration of slack at high water varies considerably, and greatly depends on the prevailing wind; the water is never stationary more than 30 minutes, and frequently it begins to fall immediately on reaching high water. There is no sensible stream of tide, either in the bay or on the adjacent coast. The time of high water and its rise is nearly the same at Simons bay, and all the bays along the coast from the cape of Good Hope to cape Agulhas.

Current.—A current varying in strength from half a knot to 2 or 3 knots, sets to the northward past Table bay and Robben island; but during the winter months, when N.W. winds prevail, a current sets into Table bay from the N.N.W., and striking the south-east shore of the bay, about Salt river, divides into two streams, the one setting northward along the coast and out between Robben island and the main land at Blaauwberg, while the other takes a westerly course as far as Cape town castle, then northerly, sweeping the south-west shore of the bay, and carrying away loose soil from the south sides of the jetties and projecting rocky points.

During the summer season it has been observed, particularly during south-easters, that a gentle stream sets round Mouillé point to the S.S.E. into the bay, and out by the Blaauwberg beach, as in the winter. The rocks about the beach from Green point to the Amsterdam battery are bare, and always free from sand, but in the depth of the bay, from the Castle to Salt river, vast quantities of sand and sea-weed are removed from the beach by the drawback of the rollers, and carried away by the current, leaving the sea shore a platform of solid rock, which is again covered up to the depth of 2 to 3 feet during the summer months.

DIRECTIONS.—Vessels steering towards Table bay during the summer months, should shorten sail before hauling in for Green point, as south-easters blow hard on opening the bay, and many ships, when entering with a press of sail, have been obliged to let all fly, to save their masts. If compelled by a south-easter to bear up from Green point, in order to seek shelter under Robben island, take care to avoid the Whale rock, and bring up on the north-east of that island (page 9), under easy sail. With ordinary precaution, there is little probability of a ship losing an anchor in bringing up in this place of shelter; should she part in trying to bring up during a south-easter, there is an open sea to leeward.

During daylight a vessel may round Green and Mouillé points in 10 fathoms water, but these points which are low and fringed with outlying reefs, are liable to prove deceptive as to their distance. It is, therefore, advisable to give them a berth of at least half a mile until Mouillé point is passed (which may be known by the Devils peak being open eastward of the lighthouse), when there is every probability of the vessel being boarded by the port-boat, and a berth given by the harbour-master.

There can be no excuse for neglecting the lead in entering Table bay, the greatest depth of water in mid-channel between Green point and the Whale rock being 20 fathoms, from which, towards the beach, the soundings gradually decrease. The bottom is foul and rocky to the north-west of a line joining the Lions head and rump, but east of this it is clear, and a vessel may, if necessary, anchor in any part in from 8 to 10 fathoms, sandy bottom.

Caution.—In dark or hazy weather, ships should never fail to use the lead in standing into the bay. For want of this precaution vessels have sailed on to Green and Mouillé points without seeing land, whilst their masts were seen over a fog from the elevated ground at the foot of Lions rump. The fogs that obscure the lights are frequently confined to the low ground in the vicinity of Green and Mouillé points, extending upwards only 100 to 150 feet. Under these circumstances it is advisable to send a mast-head man aloft, who will probably see land when it is invisible from the deck.

Vessels entering Table bay during the day when blowing hard from S.E. after passing Mouillé point, may with great advantage anchor in 10 or 12 fathoms, where they will be in a good position for dropping into the inner anchorage on the following morning, as the wind invariably falls light there during the night, although the S.E. wind may continue to blow hard on the east side of the bay. By observing this rule, more particularly in ships of large tonnage, much anxiety and risk in wearing ship, when missing stays will be avoided, and less casualties occur from loss of anchors and cables when endeavouring to bring up on the eastern shore.

At Night.—Vessels bound for Table bay from the southward, should not shut in cape point light with the land at Slang-kop point, until the *fixed* white light on Robben island (which will be seen before the *flashing* white light on Green point) bears N.E. ½ E., when they may steer for it; and when Green point light bears East, an E.N.E. course may be followed until the *fixed red* light on Mouillé point bears S.E. by S. This route will clear the Vulcan rock (page 23) and the reefs in its vicinity.

The course may now be altered to S.E. by E. ½ E., which will lead one mile northward of Mouillé point light, and within this distance no stranger should round the point at night. When Mouillé point light bears S.S.W., a course about S. by E. may be steered for the anchorage, bearing in mind not to approach the green light on the end of the breakwater too close. When Green point light is shut in with the hillocks near Mouillé point, or Mouillé point light bears N.W., distant about one mile, a vessel may anchor in from 6 to 8 fathoms water. Small vessels may steer for an anchorage in 4 or 5 fathoms, with Mouillé point light bearing about N.W. by N.

Vessels bound to Table bay from the northward should give Robben island a good berth, and not be misled by its light, for the island is low, and the dangerous Whale rock lies S. by W. ⅓ W., only $1\frac{3}{10}$ miles from the lighthouse, and one mile from the nearest point of the island. Having sighted Robben island light, a vessel should steer to to the S.W., if the light bear anything to the westward of South, until Green point light bears S. by E. or S.S.E., then steer for it until Robben island light bears N.E., when steer S.E.; and when Mouillé point light bears S.S.W. proceed as before.

Entering Table bay from the northward, and inside Robben island, keep Mouillé point light about S.S.W. ½ W. until past Robben island, with the lead going. In passing this island, soundings in 7 or 8 fathoms may be struck. When the water deepens to 11 or 12 fathoms, or Robben island light bears N.N.W. steer about S. by W. ¼ W. for the anchorage. It is, however, not prudent for a sailing vessel to enter the bay by this channel, on account of the northerly current.

In beating between Robben island and the main, the soundings shoal regularly towards the island; but when approaching the main, it is necessary to tack at the first cast of the lead in 8 fathoms.

With Robben island light and Green point or Mouillé point light, a vessel may readily determine her position by cross bearings; but in working for the anchorage the safest and easiest plan to adopt is, whilst Green and Mouillé lights are open of each other, to tack when Robben island light bears N. by W. ¾ W., and when they approach each other or become in line, to tack when Robben island light bears N. by W. This will prevent accidents from the low Blaauwberg beach, on the eastern shore of the bay, which is very deceptive, at night. Little, if anything can be lost in thus beating in, by giving up the smooth water near the shore, as a constant northerly current sets out between Robben island and the main land; added to which the wind blows with greater violence from the S.E. on the east side of the bay than it does more to the westward, though not in such sudden and violent gusts.

Strangers are not recommended to beat into Table bay at night, especially in squally or thick weather. Under any circumstance, at night, there is great difficulty in judging the distance of lights situated under high land. Therefore, the prudent course for a stranger is to keep off and on outside until daylight, sufficiently to the westward of Green point to prevent being becalmed near the land, and set in upon the coast by the heave of the sea.

Anchorage.—A good anchorage for large vessels can be had inside the breakwater, in 6 fathoms, with the breakwater lighthouse in line with Mouillé point lighthouse N.W., and the south-east angle of Amsterdam battery S.W. by W. ¾ W. Two sets of moorings are laid down inside the breakwater, about 450 feet off the entrance to the outer basin; the northern set is for large vessels, and the southern for small.

An outer anchorage recommended for large ships is in 10 fathoms with Mouillé lighthouse W. ¾ N., south-east angle of Amsterdam battery S.W. ¼ S., and the observatory S. by E. ½ E. Vessels in the summer season should moor rather taut, with 100 fathoms on the south-east anchor and 40 fathoms on the north-west; in the winter with 100 fathoms on the north-west anchor.*

The best ground tackle is required in the winter season when north-west and westerly winds prevail; and during gales precautions should be taken to prevent surging ahead and slacking the cables between the gusts. It is for want of this precaution that most cases of parting occur.

Time Ball.—The cape observatory, in lat. 33° 56′ 3″ S., long. 18° 28′ 45″ E., stands on a flat sandy heath, about 1½ miles from the beach in the south-east part of Table bay. A ball is dropped from a flagstaff near the Observatory every day (Sundays excepted) at 1 p.m., cape mean time, but as this ball is not visible from all parts of the anchorage, a time ball drops at the Lions rump signal station, and also at the north-west corner of the inner basin; these time balls fall nearly with the Observatory ball. By subtracting one second from the time of signal at the Lions rump the time becomes identical with the Observatory signal. The time for observation is at the commencement of the fall.†

	h.	m.	s.
Longitude of the Observatory E. of Greenwich -	1	13	55
Greenwich time at 1 p.m. at the Cape - -	11	46	5

Port Instructions.‡—The master of a vessel wishing to discharge or receive on board any considerable quantity of merchandise, a berth will be pointed out by the port captain as close to the jetty or other landing-place as the safety of the vessel and other circumstances will admit. The vessel must then be moored with two bower anchors, with an open hawse to the north, and especial care taken not to overlay the anchors of, or in any other way to give a foul berth to other vessels. Vessels touching for water and refreshments may ride at single anchor in the outer anchorage; and it is particularly recommended to veer out 70 or 80 fathoms of cable, as the chance of fouling or starting the anchor or breaking the chain will thereby be much lessened.

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* Captain R. A. Powell, and W. Luke, Master, R.N. 1858.

† Sir Thomas Maclear, 1860.

‡ Port Office, Cape Town, 1st March, 1855. W. P. Jamieson, Port Captain.

If riding by a hemp or coir cable, a stream or kedge should be laid out to steady the vessel; and the other bower anchor should be kept in perfect readiness to let go. When a vessel has been moored or anchored as aforesaid (with buoys and good buoy ropes), the exact place of the ship should be taken by land-marks, and the depth of water; and should she drift from such position or lose her anchors, the same must be notified in writing to the port captain. It is particularly recommended that vessels be kept as snug aloft as possible, as the periodical winds blow occasionally with much violence. The sheet anchor should be always ready for immediate use, and strict attention paid to keep the hawse clear; the more so when it is probable the wind may blow from the north.

The following signals will only be shown when, from local experience and good barometers, a severe gale may be expected. It is strongly recommended that they may be promptly observed when made from the port office; and any neglect in the observance or departure from the foregoing instructions will be reported to the agents for Lloyd's, as also to the owners of the vessels disregarding the signals.

GENERAL SIGNALS.

White pierced blue, over union-jack.—Clear hawse, and prepare to veer cable.

Union-jack over white pierced blue.—Veer to a whole cable, and see the third anchor clear.

Blue, white, blue, horizontal, over union-jack.—Down top-gallant yards and masts, and point yards to the wind, and see everything clear for working ship as far as practicable.

Union-jack over blue, white, blue, horizontal.—Strike lower yards and top-masts, and rig in jib-booms.

Union-jack over No. 3, white and red, vertical.—Shorten in cable to same scope as when first moored.

When it is considered necessary to make any of the above signals, it is strongly recommended that all commanders immediately repair on board their respective vessels, and that the above signals may be answered by hoisting the answering pendant, or the ensign at the peak or any of the mast heads.

The above signals will be repeated from the Lions Rump signal station.

Vessels having Marryat's code of signals can make their wishes known to their agents, in blowing weather, through the port office, and any assistance required will be strictly attended to, as far as practicable. Vessels not having the code can make the following with their ensigns:

1st. Ensign in the fore-topmast rigging—I am in want of a cable.
2nd. Ensign in the main-topmast rigging.—I am in want of an anchor.
3rd. Ensign in the fore rigging.—I have parted a bower cable.
4th. Ensign in the main rigging.—I am in want of an anchor and cable.
5th. Wheft where best seen.—Send off a boat.

Should vessels part from their anchors during a northerly gale, and cannot work out, they are strongly recommended to run for the *green* light shown on the shore between the castle and inner end of south wharf, and beach close to the southward of the castle ditch, the crews remaining by their vessels, by which means little or no danger of life is to be apprehended. It is also recommended that, in the case of such vessels taking the ground, any after-sail that may have been set in running for the beach should immediately be taken in, keeping the foresail or fore-topsail set, as the case may be, until the vessel is firmly grounded.

The following signals may be made from the most convenient point to vessels that are stranded.

In day-time, a number will be shown, white upon a black ground. At night, the number will be shown transparent.

No. 1. You are earnestly requested to remain on board until assistance is sent; there is no danger to life.

No. 2. Send a line on shore by cask, and look out for line from rocket or mortar.

No. 3. Secure the rope; bend a warp or hawser to it, for us to haul it on shore for the boat, or for us to send you a stout rope, to be made fast to some part of the wreck, that we may haul off a boat for bringing you on shore.

No. 4. Life-boat will communicate at low water, or as soon as practicable.

No. 5. Have good long lines ready for life-boat, and prepare to leave your vessel; no baggage will be allowed in the life-boat.

Answer to the above Signals.

By Day.—A man will stand on the most conspicuous part of the vessel, and wave his hat three times over his head.

By Night.—A light will be shown over the side of the vessel, where best seen.

Seasons.—The summer at the cape is from October to April, and in this season it is thought safe for ships to lie in Table bay; but N.W. gales are experienced here in every season of the year. In November 1799 several large ships were wrecked during a severe N.W. gale, and vessels have also been driven ashore in April; but as a rule these storms seldom blow home in Table bay from November to May. The Dutch fixed on the 10th of May as the period for all ships to leave the bay, the strong N.W. winds being then daily expected. A mountainous sea is forced into Table bay by some of these N.W. gales and before the breakwater and docks were established there was not the slightest shelter, and even now vessels coming here in the winter months, should be furnished with good ground tackle, as many vessels with their crews, have suffered, more particularly in June and July.

In the fine weather season, regular sea breezes from S.W. and west prevail in the mornings, and continue until noon or even longer; and are succeeded by S.E. winds from the land, which frequently blow fresh.

WINDS.—During summer (October to April) the prevailing winds in Table bay and near the cape of Good Hope, are from the south-east: these, although known by the name of south-easters, blow at about S. by E., frequently with violence during the summer season, and more or less in every month of the year, generally bringing settled weather.

When Table mountain in the summer months begins to be covered with a white cloud, it indicates a strong south-easter. In January, February, and March, these winds blow at times with great fury over Table and Devils mountains, and through the gap between them, driving the white clouds in rolling fleeces like wool over the perpendicular sides of the mountain. On these occasions, vessels not well moored are liable to drive, and bring both anchors ahead. There have been instances of vessels driven from Table bay by these south-easters with all their anchors down, and not regaining the anchorage for five or six days. When Table mountain is free from clouds the south-easter will be moderate, and prevails on the eastern side of the bay only, while a gentle sea breeze blows in from sea on the western side.

The so called "black south-easter" blows from about S.S.W., and is distinguished from the regular south-easter by the nimbus or rain tint of the cloud on Table mountain: it is frequently accompanied by light rain and cold weather. Black south-easters are very destructive to the vines, and to young vegetation; their appearance the next day being as if withered by frost.

During winter (May to September), north-westerly winds prevail. West and S.W. winds blow strong, attended often with fogs and cloudy weather, and frequently hail storms with the south-west wind; but the north-west winds are most violent in those months, often blowing in severe storms at North or N.N.W. for several days, with a cloudy sky and sometimes accompanied with rain. North-east winds are less frequent than any other, and never continue long.

In calm weather low fogs occasionally occur, particularly in winter and autumn, the tops of the mountains and high hills being visible above the fog, which is afterwards dispersed by the heat of the sun.

The well-known phenomenon of the Table cover or cap, and its cause, is thus described by Sir Thomas Maclear, the Astronomer Royal at the cape:*—By observation, it appears that the temperature of the air decreases nearly 3°·33 for each 1,000 feet of height, or about 300 feet for one degree of Fahrenheit's thermometer. If, therefore, the stratum of air in the condition above specified should be suddenly lifted 3,600 feet, viz., to about the height of Table mountain, its temperature would be lowered by 12°, and a portion of the humidity would be condensed in the form of cloud or fog, irrespective of each cubic foot becoming lighter by about 61 grains.

The strong and occasionally violent southerly winds which prevail during these months effect the displacement. Table mountain, like a huge wall, receives some 4 miles in breadth of the current, which bounds up into diminishing temperature, and deposits the celebrated "table cloth or cap" on the top.

The upper surface of this majestic white cap is smoothed off like a well-dressed peruke: its north border hangs over the precipice, drapery fashion; but during very strong wind it pours down like a cataract to about 1,000 feet from the top, where, entering a warmer temperature, it dissolves and disappears.

Not the least interesting of the phenomena occasionally attending it is the revolving mass of detachments which hovers over Cape town, fed by a stream of shreds from the cape at one side, which are disbursed or thrown off on the other, and float towards Table bay, where they disappear.

The "black south-eastern cap" differs from the preceding by the nimbus tint of a canopy of cloud, which projects on the southern side of the mountain over Rondebosch and Claremont, and from which light rain occasionally falls.

The strong southerly winds are ushered in by the tops of the higher elevations on each side of False bay, becoming covered in rapid succession from the southward; but these elevations seldom remain covered throughout the gale.

The mean temperature of the winter months, June, July, and August, is 55°, the humidity 81°·2, and the the temperature of the dew point 49°, viz., 6° below the mean temperature of the air. The prevailing winds are from the north, north-west, west, and occasionally from the south-west; and they are generally accompanied by rain. Hail-storm squalls are usually from the south-west. The first indication of a "north-wester" is the appearance of a mass of condensed vapour rolling over Lions hill, and enveloping the signal station, also the air feels damp, and a swell sets into Table bay; the tops of the ridges bordering the shore in the direction of Hout bay become covered, and next, but not always, Table mountain.

Strong wind, with squalls and showers, more or less heavy, follow these harbingers, and the fogs which now cover the elevations are of the usual European cast. The phenomena which are characteristic of warm dry air being forced upwards by strong wind, and again descending, are here entirely wanting.

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* *See* Meteorology of the cape of Good Hope in No. 1 of the Meteorological Papers published by the Board of Trade, 1857.

The duration of a north-wester fluctuates between two days and a week, sometimes ten days.

Remarking on a tabular summary of the winds resulting from observations extending over 14 years, Sir Thomas Maclear observes:—The direction is almost exclusively from seaward, viz., from S.E. to N.N.E. through west. The register furnishes no instance of strong winds from the eastward, only a very light air (and that rarely) when the wind is changing.

The southerly winds are dry, strong, and occasionally violent. The south-westerly are in squalls, and generally accompanied, or followed, by rain or hail. The north-westerly winds are in general strong, sometimes violent, and almost invariably followed by rain. It is this wind which is dangerous to the shipping in Table bay.

To the frequent winds may be attributed, in a great degree, the noted salubrity of the cape climate, particularly the absence of those fevers of the bilious remitting type, which in many other countries are produced by marsh miasma, or by continued calm hot weather. The putrid exudations from the ground are scoured off, the unhealthiness which springs from inattention to domestic cleanliness is greatly diminished, and the depressing effect of summer heat is considerably reduced. The inhabitants thus favoured should not grumble at a little discomfort from shifting dust, nor indulge regret that vegetation is not always green.

Leaving Table Bay.—Vessels leaving Table bay and bound north should go out between Robben island and the main. A current is almost constantly setting to the northward through this channel, and in the summer a fresh south-easter frequently blows, whilst at a few miles to the westward of the island the wind is light and baffling, or fails altogether.

COAST.—The distance from Green point to the southern extremity of the cape of Good Hope is about 32 miles, measured by the salient points, the intervening coast line being rugged and indented, whilst the outline of the country is also broken and irregular. From Green point to Duyker point the distance is about 9¾ miles in a S.W. by W. direction, and along this portion of the coast the water is deep a mile off shore, but within that distance there are numberous off-lying rocks, and patches of rocky reef. Vessels navigating in this locality should maintain an offing of 2 or 3 miles, for inside these limits the wind is generally light and baffling, from the close proximity of the high land.

From the western side of Table mountain, a high serrated ridge of mountains, called the Twelve Apostles, extends in a S.W. by W. direction, towards Hout bay. They present a steep precipitous face to seaward, and are terminated by a remarkable conical hill, similar in appearance to the Lions head, though not so high, and having at its southern slope a very conspicuous white sand patch. To the southward of this about 1½ miles distant, rises a lofty rugged hill called Suther peak, which is divided by a saddle ridge from Captain peak, a remarkable hill of considerably less elevation, overhanging, and to the westward of, Hout bay.

Lion's Paws.—Between 2½ and 3 miles to the W.S.W. of Green point lighthouse, and just to the northward of Camps bay are two clusters of rocks, 4 cables apart, known as the North and South Lions paws; these rocks are awash, with 12 fathoms water close to, and they lie one-half and one-third of a mile off shore, the Lions head bearing S.E. ¼ E. and E.S.E. from them respectively. Robben island lighthouse N.E., will lead a long mile to the westward of the outer danger; and Green point lighthouse East, leads half a mile to the northward of the two paws. Besides the Lions paws there are several other straggling rocks along shore, which is generally foul.

DUYKER POINT is rocky, and the western extremity of the cape peninsula, and as there are some outlying rocks off it, the point should be rounded with caution, and not within the distance of a mile. There is no bottom with 40 fathoms, 1½ miles off shore, and Green point light bearing E. by N. ¾ N., clears the point about that distance. Half a mile to the north-eastward of Duyker point, there is a dry ledge of rocks, which extends fully one-third of a mile off shore.

Vulcan Rock.—This rock, which is the central and highest of a cluster about three-quarters of a cable in extent, is awash at high water, and has from 11 to 20 fathoms a cable distant all round, and 19 fathoms a quarter of a mile inside it. It lies nearly 1¼ miles off shore, with Duyker point N.N.E. ¾ E., and the rounded rocky bluff, forming the north point of Hout bay E. by S. ¾ S. Between the Vulcan rock and the shore the ground is foul; and a line of breakers extends from Duyker island,—a low flat rock, close to the shore—to a mid-channel position.

The passage must therefore be deemed dangerous, although the *Abercrombie Robinson*, East Indiaman, passed through in 1831, the soundings being from 8 to 13 fathoms. This, however, was unintentional, the ship having been drifted close to the rocks during a fog; but the fact is mentioned, as it might possibly be of service under similar circumstances.

HOUT BAY.—From Duyker point to Slang-kop point, the distance is 6 miles in a S.S.W. direction, and between these points the land falls back to the eastward, forming Hout and Chapman bays. Hout bay is formed by a deep indentation in the high coast line, and may be said to consist of an outer bay, open to the westward, containing a space of nearly a square mile, with from 20 to 6 fathoms water; and an inner bay, open to the south-west, half a square mile in extent, with depths gradually decreasing from 7 to 3 fathoms.*

On the western side of the inner bay is York point and battery, and on the opposite side nearly three-quarters of a mile distant is Blockhouse point. It is advisable to anchor as close in, round York point, as the vessel's draught admits. With an inside berth a vessel may lie safely in all weather, and this port, which is capable of affording shelter to six or or eight vessels of ordinary size in all winds, if properly moored, is on the whole a better harbour than would appear at first sight. Vessels at anchor farther out are exposed to the swell, but are still sheltered from all quarters except the S.W., which wind is said not to blow home against the high land.

The coast on either side of the entrance is high and rugged, particularly on the eastern side, which is quite inaccessible. Here the hills rising precipitously from the coast, are broken by a succession of ravines, which renders walking around the shore impracticable. There is no landing on this side. York point is overlooked by Captain peak, a sharp rugged hill, with a perpendicular face on its southern side, and connected by a saddle ridge with the higher land to the northward known as Suther peak.

The northern shore, forming the head of the bay, is low and marshy with a stream of fresh water running into the bay. At the back of this low ground rises a conical hill similar to the Lions head, but not so high which has a conspicuous white sand patch on its southern slope. The landing is on the west side of the bay within York point, and is tolerably good, even during south-west gales. A moderate outlay would furnish good landing jetties, and sheltered spots for the repair of shipping.

The summit of a remarkable peak, Constantia berg, 3,200 feet high, seen over the high cliffs, on the eastern side of the bay bearing E. ½ S., leads directly to the outer bay. A line of foam, giving a false appearance of danger, is frequently seen across the entrance. This bay is scarcely ever visited by ships, and yet it possesses advantages as a place of shelter especially for steamers. The only objection to it for sailing vessels, is one that is applicable to all harbours surrounded by high land, namely, variable winds and strong gusts from the shore.

Dangers.—The only outlying dangers in the approaches to Hout bay are :—Vulcan rock before mentioned; some sunken rocks extendings about a cable off York point; and a sunken reef which lies W. ½ S. from Chapman peak, about one-third of a mile from the shore. These dangers can scarcely be deemed to obstruct navigation, as common prudence would keep a vessel beyond their limits.

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* *See* Admiralty plan of Hout bay, No. 635; scale *m* = 2·1 inches.

Supplies.—Fresh water is abundant in Hout bay, but at present there are no conveniences for getting it on board. Provisions may easily be obtained from Cape town, and fish of good quality is abundant. Coal is not yet obtainable, but the port appears to be admirably adapted for a coaling station for steamers, especially during war.

It is recorded that during the war of 1793, a French frigate ran into this bay, filled up with water, stock, and vegetables, and sailed before the authorities could collect a sufficient force to attack her. In consequence of this, two forts were built, and a party of men stationed there, but the forts are now in ruins. This is the best available small harbour in the colony.

Tides.—It is high water, full and change, in Hout bay at 2h. 20m.; springs rise 5 feet.

SLANG-KOP POINT.—Above Chapman point, which is common to Hout and Chapman bays, is Chapman peak, of dark appearance and considerable elevation. From Chapman point to Slang-kop point the distance is about 3½ miles in a S.W. ¼ W. direction; following the former point the shore falls back into a curved sandy beach forming Chapman bay, which is fringed with rocks, and being exposed to north-westerly winds, should not on any account be used as an anchorage.

Immediately at the back of Slang-kop point the cliffs rise to 300 or 400 feet; but the point itself is low and rocky, with a ledge of sunken reefs fringing the shore, at the distance of 1¼ miles. The sea breaks over this rocky ledge only in westerly winds, when there is usually a heavy swell. From Slang-kop point to the Kromme river, a distance of 5½ miles, in a southerly direction, the coast becomes higher and rugged; thence to the cape of Good Hope it is elevated from 300 to 400 feet, and is tolerably regular in outline.*

Albatross rock, has less than 6 feet water on it, with 7 to 13 fathoms around, and 5 fathoms between it and Olifants Bosh point; the rock is about 2 cables in length, E.N.E. and W.S.W., and one cable in breadth; its outer part bears W. by S. from Olifants Bosh point, distant 6 cables.*

A mile westward of Albatross rock, the soundings increase to 27 and 30 fathoms, and nearly the same depths are found at the distance of 2½ miles in the same direction.

At 1$\frac{1}{10}$ miles N.N.E. ¾ E. from Albatross rock, and nearly 4 cables from the shore, a detached rocky patch of small extent, with less than 6 feet water on it, also exists.

Rocky Bank.—Heavy breakers, during bad weather, having been reported by the keepers of the cape of Good Hope lighthouse in a north-westerly direction, the locality was examined in May, 1868, by Staff Commander R. C. Dyer, R.N., with the following results:—

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* From a survey by Commander Wharton, H.M.S. *Fawn*, 1878.

The breakers were found to be on a rocky ridge, about 1¼ miles in length north and south, and from one to 1¾ miles from the shore, having 10½ fathoms water on its shoalest part (near a depth of 11 fathoms already marked on the chart), with soundings gradually increasing to 20 fathoms on its outer edge, and with 18 fathoms between the ledge and the coast.

From the shoalest part of the bank the cape of Good Hope lighthouse bears S.E. ½ S., 6 miles; Paulsberg E. by S.; and Slang-kop point N. by E. ¼ E., 10 miles.

This rocky bank lies somewhat in the fairway for vessels passing round the coast to and from Table bay, and as in heavy southerly gales a continuous line of breakers has been observed to extend between this ledge and the shore, vessels should not approach this part of the coast in bad weather.

CAPE of GOOD HOPE.—The southern extremity of the cape peninsula is a high precipitous cliff, surmounted by two peaks distant from each other 1,800 yards N.N.W. ½ W. and S.S.E. ½ E. The one to the north-west, 880 feet high, is known as Vasco de Gama: and on the other, 800 feet high, near the pitch of the cape, stands the lighthouse.

LIGHT.—The lighthouse on cape point, the southernmost extremity of the cape peninsula, is of iron, 30 feet high, and painted white; it exhibits a *revolving* white light, showing a bright face for the space of *twelve seconds every minute.* It is visible all round the compass, except between the bearings of S.S.W. and S. ½ E.; and between S.S.E. ⅛ E. and S.S.E. ¾ E., on which latter arc of 7° it is obscured by the peak of Vasco de Gama rising 64 feet above the light. The light is 816 feet above the mean level of the sea, and in clear weather should be seen from a distance of about 36 miles.

Caution.—Great care is necessary when approaching this light, as from its great elevation it is frequently obscured by mist, although at the same time clear round the horizon.*

A Signal Station stands on the cape close to the lighthouse; and passing vessels, showing their number, will be duly reported.

Dias Rock, of small extent and about 8 feet high, is detached from the south extremity of the cliff projecting from the lighthouse on cape point, but it is connected with the point by sunken rocks. Ships may round this rock at 1½ or 2 cables distant, as far as depth of water is concerned.

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* During a moonlight night, in August 1866, the sandy beach was seen from H.M.S. *Challenger*, a quarter of an hour before the light was visible.

South-west Reef, on which the sea generally breaks, appears to be the outer projection of a rocky ledge, extending W. by S. ⅔ S. nearly a mile from cape Maclear, the south-west extreme of the cape of Good Hope. From it the lighthouse on cape point bears about E. ½ N. 1¾ miles. Under no circumstances should vessels attempt to pass inside this danger, and coming from the northward they must not shut in Slang-kop point until the light on cape point bears E. by N. ½ N.

Bellows Rock, from which the lighthouse on cape point bears N.N.E. ¾ E. 2⅛ miles, is awash at high water, and the sea always breaks. The water is deep close round this rock except on its south-west side, where there are sunken rocks about a cable distant, on which the sea does not always break.

Anvil Rock.—This danger has only 6 feet on it at low water springs, and lies on the eastern end of a rocky patch, about 2 cables in length, east and west, having a depth of 3 fathoms over it. Breakers only show upon these rocks at low water with a heavy swell, and the soundings are from 14 to 18 fathoms close outside them; much care is therefore requisite when approaching their vicinity. From the Anvil rock, Devils peak over Table bay appears just open east of Muizenberg, a mountain 1,651 feet high, which rises near the shore at the north-west corner of False bay; the Bellows rock bears W. ¾ S. nearly distant about 1¾ miles; and the lighthouse on cape point N.N.W. ¼ W. 1⅔ miles; the passage between Dias and Anvil rock is a little over a mile wide.

Three pinnicle rocks with 4½ and 5 fathoms water on them lie between Dias rock and the Anvil rock, rendering the passage between them unavailable for ships of large draught, or even for small vessels in bad weather. The inner danger, with 4½ fathoms over it, and 10 fathoms all round, lies S.S.E. ½ E., 3 cables from the Dias rock. The two outer rocks, having 5 fathoms over them, are about a quarter of a mile apart, with 6 fathoms between, and 10 fathoms all round. The western one lies S. by E., 8 cables, and the eastern S.S.E. ¼ E., 9 cables, from the Dias rock; the latter danger bearing from the Anvil rock N.W., distant about 3 cables.

DIRECTIONS.—Making the Cape from the Westward.—Vessels approaching the cape of Good Hope from the westward will, if the weather be clear, make cape point light at the distance of about 36 miles, unless it should happen to bear between S.S.E. ⅛ E. and S.S.E. ¾ E., in which case it is invisible through an arc of the horizon of 7° (or a chord of 4½ miles) being intercepted by Vasco de Gama peak. Caution is therefore necessary not to continue a course between these bearings when making the land at night, or in hazy weather, but to steer so as to cross the darkened region with as little delay as possible. By using this precaution, there is little danger to apprehend from the light not being visible on this small sector of space. These bearings also lead from about a third of a mile to a mile, to the south-west of the Albatross rock.

Should a vessel be near the coast at night, and the land not visible, she should be kept to the S.W. until the light is seen and her position ascertained.

As the wind seldom, if ever, blows from the east or north-east (*i.e.*, directly off the peninsula), sailing vessels bound either for Table bay or round the cape of Good Hope, should ensure a weatherly position to the north or south, according to the season of the year. Those for Simons bay have been detained many days by south-easters off the Lions head and Hout bay, in consequence of their making the land too far to the northward during the summer season. The same winds would have been fair for them had they been 30 miles farther south. On the other hand a vessel bound for Table bay in the winter season will find it difficult to make her port from a position off cape point, during the continuance of North and N.W. winds, notwithstanding the general prevalence of a N.N.W. current.

Rounding the Cape from the Westward.—Steam vessels often pass between Dias rock and the Bellows and Anvil rocks, especially if bound into Simons bay, but the pinnacle rocks before mentioned renders it necessary for great caution to be used in taking this route. To avoid the south-west reef, when nearing cape Maclear, do not bring Bellows rock to bear southward of S.E. ½ S., until Dias rock bears E. ¾ N., or until cape Maclear is midway between Vasco de Gama peak and a gap which separates the lighthouse from that peak; then steer so as to pass 1½ to 2 cables southward of Dias rock. Should a vessel unfortunately strike on any of the outlying reefs, and become in a sinking state, there is a small sandy cove between the lighthouse and cape Maclear, where she may be beached with greater safety than on any other part of the adjacent coast.

The Dias rock bearing E.N.E. is a fairway course between Bellows rock and south-west reef; and bearing N. by E. ¼ E. it is a fairway course between the Bellows and the Anvil rocks. The Bellows rock bearing S.W. by W. ¼ W. is a fairway course between the Dias and Anvil rocks.

Rounding the Cape from the Eastward.—When cape point light is in sight vessels, in standing towards the land, should be guided by frequent bearings; at the greatest range of the light its bearings will give an idea of the vessel's position with reference to Danger point which, with the rocks off it, should be carefully avoided, but when to the westward of this latter point, the light should not be brought to bear more westward than N.W. ½ W., which will clear Mudge point and all danger off cape Hangklip. As cape Hangklip, and the narrow neck of land which connects it to the shore, is very low, great caution is necessary in passing it in hazy weather, especially if bound into Simons bay.

If bound for Table bay from the eastward, vessels, after rounding the cape of Good Hope and passing Slang-kop point, should not shut in cape point light with the latter point, until the light on Green point becomes visible, which will be on an E. by N. ¾ N. bearing. This course will lead 2 miles westward of the Vulcan rock, which lies off the northern point of entrance to Hout bay. A route for Table bay may then be followed as directed at page 15.

FALSE BAY.—The entrance to this bay is formed between the cape of Good Hope on the west, and cape Hangklip on the east, the distance being 16½ miles, on a S.E. ¾ E. and N.W. ¾ W. bearing. Within this line the bay, which is nearly square in form, extends to the northward about 18 miles. There are several dangers in the bay, but the middle and eastern sides are considered clear, though the bottom is foul, and generally unfit for anchorage. Notwithstanding, a vessel in False bay, with foggy weather and light winds, may bring up with a stream anchor and cable. The general depth varies from 46 fathoms at its entrance to 20 fathoms about 5 miles from its head, thence it gradually shoals to 4 or 5 fathoms to the breakers, about half a mile off the beach. At the entrance of the bay there is a rocky bank, the least water on it 13 fathoms, and its north-west end is S.S.E. ½ E. 5¼ miles from cape point lighthouse.

Whittle Rock, with only 7 feet water, appears to be about 6 feet in diameter. It rises on the south side of an extensive rocky patch nearly a mile in circumference, upon which the depths vary from 7 to 10 fathoms. It lies with cape point lighthouse bearing S.W. by W. ½ W. distant 7¼ miles, and the lighthouse on the Roman rocks N.N.W. 6½ miles nearly. It seldom breaks, and then only with a heavy sea and at low water. Various kinds of floating beacons have from time to time been moored to mark this danger, but have been so frequently washed away that since 1854 they have not been replaced.

Beacons.—A beacon, 35 feet high and 56 feet above high water mark, painted white with a red band in the centre, stands on a flat-topped rock, a few yards from the shore near Oatland point, and 1,700 yards from an inner white beacon with staff and ball, on the shoulder of the hill beneath Simons berg. From the Whittle rock, these two beacons are in line with a large whitewashed patch on the hill, north-west of Simons town, N.W. by N.; as are also the black and white beacons, each with staff and ball, standing on the land over Buffals bay bearing W. ¾ S.

The advantage of the beacon on Oatland point, is that it tends to point out when vessels are to the westward or inside the Whittle, whilst it is kept open eastward of the beacon on the shoulder of Simons berg.

Vessels at a distance from the eastward will find the whitewashed patch servicable for pointing out the position of the Whittle. There are two sand patches near the whitewashed mark similar to it in appearance, and in damp weather the mark is not distinguishable.

Clearing Marks.—Chapman peak, well open to the westward of Elsey peak N. by W. ¼ W., leads a short half mile westward of the Whittle; and Roman rocks lighthouse, in line with Elsey peak N. ¼ W. leads nearly midway between Whittle rock and Miller point.

BUFFALS BAY, on the western shore of False bay, and nearly 3 miles northward of cape point, is a small indentation in the coast, and marked by a white sand patch. On the ridge of hills behind the bay is a black beacon, which shows out clearly as a mark for the Whittle rock; a white beacon for the same purpose also stands near the sea, just to the northward of the bay; and the two in line leads to the rock. The depth of water is 4 or 5 fathoms near the shore, and in a north-west breeze a vessel may anchor off it in 8 to 10 fathoms. If unable to beat to windward, this is more preferable than going to sea. There is a fishing establishment and a landing place in the bay.

Temporary anchorage will be found in 26 fathoms, sandy bottom, with cape point S. by W. ½ W. and the black beacon W. by N. ¾ N., distant from the shore nearly 1¼ miles. Here the water will be smooth in a north-wester, and if a south-easter comes on, a vessel will have room to weigh, cast, and run up to Simons bay.

Between Buffals bay and Smithwinkle bay, 3¼ miles farther north, the shore is overlooked by four sharp peaks. Off both points of Smithwinkle bay, rocks, some of which are above water, project one-third of a mile from the shore, and outside the Batsata rock, which is 8 feet high, and the highest and outer of those off the southern point, is a patch with 2 fathoms. Vessels must not approach nearer this point than three-quarters of a mile.

ROCKLAND POINT is about 7½ miles N.N.E. from Cape point, and 3 miles S. by W. ¼ W. from the Roman rocks lighthouse. It is the most prominent point, and at the foot of the highest land, between Cape point and Simons bay. The point runs off to a ledge of dry rocks, beyond which there is an isolated rock named Backkoven, lying 2 cables to the south-eastward. This rock, which is about 9 feet above high water, has 11 fathoms water close outside it, and may, therefore, be passed as close as convenient. Inside this rock there are 7 fathoms until within a few yards of the point.

From Smithwinkle bay to Rockland point the land is lofty, the hills rising to a height of 2,200 feet almost abruptly from the sea. Farther to the northward the hills recede a little from the sea.

At 1¼ miles northward of Rockland point is Oatland point, with a few rocks off it, on one of which is the white and red Whittle beacon. Between these points the coast should not be approached nearer than a long half mile.

On the slope of the mountain which connects Signal hill with Simons berg is a white beacon with staff and ball, which, when on with the whitewashed patch on the summit of the hills west of Simons bay, denotes the bearing of the Whittle rock.

Noah's Ark is a flat-topped rock, in shape resembling a barn, about 100 feet long by 30 feet high, lying half a mile S.E. ½ E. from Blockhouse point, the southern point of Simons bay, 3 cables off shore, and about a mile northward of Oatland point. The water is deep close round it, save on the north-east side, where, at 30 yards off, there are 2½ fathoms; but it may be approached to a prudent distance. The passage inside Noahs Ark should on no account be attempted.*

For a distance of 3½ cables in a N.N.W. direction from Noahs Ark, the ground is shallow and foul, having on it Nimrod rock, with 8 feet water, and terminating with the Phœnix rock, with only 3 feet over it. This latter danger is marked by a beacon, with the word *rock* on it, lying N.N.W. half a cable from it.†

Maidstone Rock, with 22 feet on it at low water springs, lies S.E. ½ E. 2 cables from the south-west end of Noahs Ark, and about 3¼ cables from the nearest shore. The base of this rock is about 20 feet in diameter, rising to a sharp peak, the summit of which is so small that it is difficult to keep the lead on it.

The rock was discovered by a fishing boat of H.M.S. *Maidstone,* in February 1830. The marks for it are, the south-west end of Noahs Ark on with the north corner of a garden wall (mount Curtis), N.W. ½ W.; a remarkable round rock on the beach on with Anderson's cottage; and the Roman rocks a little open of the foot of Muizenberg, or Castor beacon in line with the shoulder of Muizenberg.

There is also a small patch of 29 feet, which is steep-to on all sides, lying one cable S.S.E. ¼ E. from the Maidstone rock. The marks for it are, Roman rocks lighthouse in line with Castor beacon N.N.E. ¾ E., and the south end of Noahs Ark N.W. ½ N.

A vessel of heavy draught in approaching the Maidstone rock, should not pass within a line drawn from Oatland point beacon to the Roman rocks lighthouse, bearing N.N.E. ¼ E. which will lead about three-quarters of a cable outside the 29 feet patch, and 1½ cables clear of the Maidstone rock, until the admiral's house appears its breadth open of Noahs Ark.

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* *See* Admiralty plan of Simons bay, No. 1,849, scale, m = 8 inches; and plan on No. 2,082.

† The ship *Phœnix,* in 1829, in hauling into the bay too soon ran upon these rocks and became a total wreck.

ROMAN ROCKS are a cluster occupying a space of about three-quarters of a cable across, one of the rocks being above water, the rest awash, and the whole surrounded by foul rocky ground. An iron circular light tower stands on the highest and southern rock, 48 feet high, and painted in broad, horizontal bands of *red* and *white*. It bears N.E. by E. three-quarters of a mile from Noahs Ark, and E. by S. 1¾ miles from the Dockyard clock tower.

LIGHT.—The lighthouse on the Roman rocks exhibits, at 54 feet above the mean level of the sea, a *revolving* white light, which shows a bright face for the space of *twelve seconds, every half minute,* and should be visible in clear weather from a distance of 12 miles.

Castor Rock is detached from the Roman rocks cluster, and lies N.N.E. ¾ E. 1¾ cables from the light tower. It has 15 feet water on it, and is marked by a beacon with a flag attached, having the word *rock* on it, moored one-third of a cable N.E. of the rock. Between the rock and the lighthouse there are patches of 19 and 24 feet water.

SEAL ISLAND is a low rocky islet, 2 cables long, north and south, and one cable wide. It lies E. ½ S. rather more than 6½ miles from the Roman rocks lighthouse, and is surrounded by sunken rocks, upon which the sea usually breaks. Landing is difficult, except in very smooth water. It abounds in guano, and is the resort of penguins, whose eggs may be collected in considerable numbers at the proper season.

York Shoal, the nearest part of which lies S. ¼ W. one mile from Seal island, is a rocky patch with from one to 4½ fathoms on it, and is about 4 cables long N. by E. ½ E. and S. by W. ½ W., and 1½ cables wide. The sea generally breaks on the shoalest part.

East Shoal is a rocky patch with from 4 to 8 fathoms over it, excepting in one small spot near the middle, that nearly dries at low water springs, and on which the sea is always breaking. The shoal is about half a mile long N.E. by E. and S.W. by W., and one quarter of a mile broad. From the shoal spot, Seal island bears N.W. ½ W. 3½ miles.

Abreast of Gordons bay, in the north-east corner of False bay, is another shoal patch, about a third of a mile in diameter, with from 6¼ to 9 fathoms, and on which the sea breaks in heavy gales. The shoalest part is 3¼ miles off shore, and S.E. by E. ⅜ E. 5¾ miles from East shoal.

SIMONS BAY, about 11 miles northward of Cape point, and near the north-west corner of False bay, is accessible all the year round, and affords complete shelter, for with heavy south-easters, the only winds that cause any inconvenience, vessels ride safely, and though the bay is open to the east and north-east, these winds never blow strong, so that it is a safe retreat for vessels at all seasons. The shores of the bay may be approached all round to within 2 cables, and the closer a vessel lies to the patent slip and hospital, the more sheltered she will be in south-east winds; but in bringing up care is required not to foul the several pairs of moorings laid down for men-of-war. If, therefore, it is purposed taking an inshore berth, it is better to bring up on the south-east side of the bay, well under Blockhouse point, on which stands a fort and round white tower, at one-third of a mile from the sea.

The Naval yard, though small, is a complete establishment for its size, and has all the necessaries required for refitting and provisioning Her Majesty's ships. Government moorings are laid down for one line of battle ship, one frigate, and three sloops.

There is a patent slip, which at spring tides is capable of taking up ships of 1,300 tons, that can be lightened to a draft of 14 feet.

Simons bay is in telegraphic communication with Cape town, thence to Paarl, Stellenbosch, Wellington, &c. In the course of time it is probable that a railway will be constructed to Cape town, or if not, that Kalk bay will be improved as a landing place for cargoes to be discharged there and conveyed to Cape town, so as to get over the difficulties of carriage across the sandy beaches between Simons and Kalk bays.

Wharf Rock, having 9 feet water over it, lies 260 yards E.N.E. of Simons town jetty; and is marked by a buoy, with the word *rock* on it.

Supplies.—The water in Simons bay is excellent. For men-of-war it is brought alongside in a tank vessel, containing about 70 tons. There is a smaller tank vessel, for merchant ships, containing about 5 tons, but the dockyard tank is frequently lent to water merchant ships on application. Coals are sent off in bags in open boats holding about 8 tons.

Refreshments and supplies of all kind, if in excess of what Simons town can supply, are obtained from the interior and from Cape town, distant by road about 20 miles. Fish is generally abundant in the bay, and the beaches are good for hauling the seine.

Caution.—There is a fish in Simons bay commonly called toad-fish, about six inches long; back dark, with deep black stripes; belly white, with faint yellow patches; it swims near the surface, and is a constant attendant on lines employed fishing. When taken from the water it puffs out considerably. Should any portion of the fish be eaten, *death* ensues in a few minutes.

Anchorage.—A good berth for a large ship in Simons bay is about half a mile off shore, in 9½ to 10 fathoms, with Noahs Ark S.E. ¾ S., and the clock tower in the Naval yard W. by S. ½ S. Vessels moor N.W. and S.E., open hawse to westward and the longest scope of cable to the N.W. from May to September, for this being the winter season, the winds prevail from that quarter, and often blow in strong gusts over the hills. From September to May, the S.E. and South winds may be expected to predominate; then the starboard anchor should lie to the S.E.

Time Ball.—A mast with a lever arm and a circular disc attached, stands close to Simons town telegraph office, for the purpose of giving to vessels in Simons bay at the instant of 1 p.m. Cape Observatory mean time. At 55 minutes past noon the arm with the disc is raised to a right angle with the mast, and it falls at the instant of 1 p.m. The position of the Time signal is in lat. 34° 11′ 30″ S., long 18° 25′ 48″ East of Greenwich, or 11·8 seconds of time, West of the Cape Observatory.

Owing to the imperfect insulation of the telegraph wire, the Simons bay time ball sometimes fails. On these occasions the ball is kept up until two o'clock, and then slowly lowered.*

Compass Deviation.—Iron and other vessels desirous of testing their compasses, to ascertain the local deviation, will find it convenient to use Sharp peak, a conspicuous mountain to the north-east of Hangklip berg, which rises over cape Hangklip, instead of having a person on shore taking simultaneous observations. The true bearing of this peak from the anchorage is S. 71° 0′ 42″ E.; and as the peak is 24 miles distant, the bearing will not be materially affected by the change of position of the vessel in any part of the anchorage in Simons bay.*

Tides.—It is high water, full and change, in Simons bay at 2h. 44m.; springs rise 5¼ feet, neaps 3¾ feet. There is but little current perceptible in the bay at any time.

Winds. — From October to April, south-easterly winds generally prevail, but do not continue longer than five or eight days at a time, and are succeeded by variable winds. In Simons bay as in False bay, it frequently happens that these winds, after blowing very hard for a day and part of the night, abate towards morning, and are succeeded by a land breeze from the W.N.W. By taking advantage of this and weighing with the first of the breeze, a vessel may sometimes get to sea before the return of the south-easterly wind. If unable to accomplish this, the most prudent plan will be to return to the anchorage in Simons bay.

In the south-east season these winds blow frequently and with violence at S.S.E. ½ E., making landing in boats disagreeable and at times almost impracticable without sail, when very low canvas is recommended. It is often found that when blowing hard from the S.E. in False bay, there is a gentle breeze from the N.W. in Table bay.

From May to October north-westerly winds are most prevalent, with frequent gales and rain from that quarter. These gales occur at times all the year round, but they are rare in the south-east season. The wind scarcely ever blows from the north-east, and never with violence. The south-west wind (commonly called the kloof wind) is cold and frequently rainy. During winds from off the land no boats should sail in the bay on account of the sudden, violent, and variable squalls which blow down from the hills.

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* Sir T. Maclear.

If the barometer stands at 30·2 to 30·3 and falls suddenly to 30·0 or 29·95, in nine cases out of ten it will blow a strong S.S.E. gale.* The Muizenberg capped with white cloud is generally the precursor of a south-east wind; and if the Hottentot Holland range on the east side of False bay is also capped, the south-easter will probably be violent and of long continuance. When Simons berg has a misty cloud on its summit, rain may be expected within an hour or two.

North and East shores of False Bay.—To the northward of Simons bay the land ranges in height from 800 to 1,200 feet as far as Muizenberg, a mountain 1,651 feet high. There are four remarkable sand patches on this coast—the first on the north-west shore of Simons bay, the second between that and Elsey peak, the third in Elsey bay, and the fourth in Fish-hook bay.

There are fishing stations in Fish-hook and Kalk bays. At the latter place (pronounced *Cork*) there is a village and a whaling station. The only good landing along this shore is at Kalk bay, where a projecting ledge of rocks makes a little shelter. From Fish-hook bay to the Muizenberg the hills rise abruptly from the sea, leaving only room for the road.

The north side of False bay is a low sandy beach with no landing, and is rarely approached by ships on account of the dangers in the northern part of the bay about Seal island.

The eastern shore of False bay to the southward of Gordons bay is bold, having no outlying dangers more than one quarter of a mile off it. The high land comes close down to the south side of Gordons bay, whence to Hangklip is an unbroken chain of mountains.

The Strand is a fishing station about 2½ miles north of Gordons bay. It has a boat harbour formed by a circle of sunken rocks extending some distance from shore. The entrance is narrow, but when inside it affords good shelter.

Gordons Bay is formed on the north-east side of False bay, and affords shelter from south and easterly winds. As it is quite exposed to westerly winds vessels can only lie there in the summer months.

H.M.S. *Boscawen* anchored here in December 1857 in 10 fathoms, with the south point of the bay S.W. ¾ W., and cape point W. ½ S. The wind shifted to the S.W. and a very heavy swell set in, but it was not dangerous, as the ship lay broadside on with a slack cable. It is doubtful if this bay could ever be made available as a port for landing cargo, there being generally a surf on the beach.

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* James T. Russell, Master, R.N., 1846.

Kogel Bay, to the southward of Gordons bay, is about 3 miles across and falls back to the eastward more than a mile, but the bottom in many parts being rocky it is not a good anchorage, although shelter may be obtained from south and easterly winds.

Pringle Bay or cove is 3 miles to the N.N.E. of cape Hangklip, but being open to the westward, the same objections apply to it as to all the other bays on this side of False bay. Temporary anchorage will be found in 9 or 10 fathoms water.

CAPE HANGKLIP.—The quoin-shaped berg of this name (sometimes called False cape), 1,448 feet high, is at the eastern point of entrance to False bay, and makes as an island in approaching from the southward. Its western face appears to overhang from some points of view (hence its name), and a conspicuous sand patch extends half way up its south-east side.

Inside Hangklip the land is low, then rises to Sharp peak 2,780 feet high, at a distance of 3½ miles from Hangklip berg. This peak is the commencement of a chain of mountains extending to the eastward.

The cape itself, about 1¼ miles to the southward of the berg, is very low, and a heavy sea always breaks upon it; there is a sunken rock lying N.W. ¾ N. three-quarters of a mile from the cape, and one-third of a mile off the shore, and as the sea breaks some distance outside of this rock, it is not advisable to pass within a mile of the cape.

DIRECTIONS for FALSE BAY.—Ships coming from the westward by day, and passing outside the Anvil and Bellows rocks, frequently lose much time and distance by being apprehensive of the former rocks, when the sea does not break to show their position; and consequently run much farther east than necessary. It is therefore recommended, after passing the Bellows at about half a mile distant to steer East, until Vasco de Gama peak comes open eastward of the hill on which the lighthouse stands, or until Constantia berg comes well in sight over Rockland point bearing about N. ¾ E.

In this position a vessel will be eastward of the Anvil rocks, and may steer in N.N.E., a course midway between the Whittle rock and the shore; when Elsey peak is in line with the Roman rocks lighthouse N. ¼ W., steer for it, altering course when within a mile of the lighthouse so as to pass midway between it and Noahs Ark; and when the blockhouse on Blockhouse point bears W. by S., the vessel will be well clear of the Nimrod and Phœnix rocks, and may haul into the bay, taking however, sufficient sweep so as to have time to chose a berth and room for rounding to.

Vessels westward of the Whittle rock and nearing that danger will easily avoid it by keeping the Beacons (page 29) erected to show its position well open of each other; and Chapman peak, a dark peak over the southern side of Hout bay, well open west of Elsey peak, N. by W. ¼ W.

A line drawn from Oatland point beacon to the Roman rocks lighthouse, N.N.E. ¼ E., passes outside the 29-feet patch, and 1½ cables from the Maidstone rock, page 31: a vessel of heavy draught should not therefore pass within this line until the Admiral's house is open its breadth of Noahs Ark.

The ordinary channel for vessels entering Simons bay is between Noahs Ark and the Roman rocks, a width of seven cables; but if the wind be N.W. and the vessel under sail, the passage east and north of the Roman rocks should be taken, as it affords better working space. A vessel of large draught, however, when passing north-east of the lighthouse on the Roman rocks, should give it a berth of one-third of a mile, to avoid the Castor rock.

Ships bound for Simons bay have frequently, in former days, mistaken Muizenberg mountain, which rises from the shore at the north-west corner of False bay, for the high hill over the south side of Simons bay, and have, in consequence, been stranded on Muizenberg beach, the lowness of which, coupled with the dazzling colour of the sand of which it is composed, causing it to be of similar appearance to the surrounding water. It should be borne in mind that the first or westernmost patch of white sand, extending high up the hills, is to the northward of Simons bay.

The sand patches, four in number, are conspicuous even at night, and in steering for Simons bay they will be ahead, and on the *starboard* bow; whereas, if the vessel is steering for Muizenberg beach, they will all be on the port bow. These remarks may appear unnecessary with the light on the Roman rocks, but, notwithstanding this, several ships have made the mistake; one ran on shore, and several others were only saved by anchoring close to the beach, from which they were rescued by assistance from Simons bay. It should also be remembered that, with the exception of the sand patch over Buffals bay, these are the only sand patches on the west side of False bay.

Observe also, that the soundings westward of Seal island for 1½ mile are 15 and 15½ fathoms, rock, gravel, and bits of shells; and thence to Elsey bay 14 and 14½ fathoms, clean white sand (the sand is not so white and clean in any other part of the bay); therefore, in thick weather, should a vessel get so far into the bay as to have 14 fathoms clean white sand, or 15 fathoms, rock, gravel, and bits of shells, she should immediately steer to the westward or anchor according to circumstances.

If apprehensive of being near the Whittle rock in thick weather, it may be of service to know that on its south-east, south, and south-west sides at half a mile distance, the soundings are 22 and 23 fathoms, large bits of whitish shell without any sand; the same bottom, in 24 and 25 fathoms, will be found in some other places in the vicinity of this rock, but in no other part of the bay are there such soundings.

At Night.—Caution is necessary in misty weather against the possibility of mistaking the light on the Roman rocks for the light on cape point, as they are both revolving, and only 10½ miles apart. The distinction consists in the difference of interval of revolution, the light on cape point showing its bright face *every minute*, and the light on Roman rocks *every half minute.*

Care should be taken in rounding the cape of Good Hope for Simons bay to give it a berth of not less than 3 miles; the position of the vessel may from time to time be fixed by bearings and the distance run between them,* or by the angle of elevation of the light. By not going into less than 45 fathoms, until cape point light bears northward of N. by E. ½ E., a vessel will clear the Bellows rock. When eastward of the Anvil rock with cape point light bearing N.N.W. ¾ W., distant 3 miles,† steer N.N.E. until the Roman rocks light bears N. ¼ W., then steer this latter course to within a short half mile of the light, when alter course to N.W., which should lead a quarter of a mile northward of the Phœnix rock, and haul gradually into the anchorage.

With cape point light bearing S.W. by W. ¼ W., a vessel will be in a line with the light and Whittle rock, and with the Roman rocks light N.N.W. westerly a vessel will be in line with this latter light and Whittle rock.

Passing Eastward of Whittle Rock.—Observe that Whittle rock is nearly in a straight line between Hangklip and Simons bay. Running for Simons bay do not bring the cape light to the southward of W.S.W. until the Roman rock light is between the bearings of N.N.W. ½. W. and N.W. by W. ½ W., between which bearings a vessel will be clear of the Whittle on the one hand and the York shoal on the other. If working in, make short tacks between the above bearings of the Roman rock light, until certain of being within 5 miles of it.

By day, Chapman peak touching the western edge of the sand in Fishhook bay, leads two-thirds of a mile to the eastward of the Whittle rock.

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* Two bearings and the distance run between them:—This useful little table by Raper is in the chart boxes of all H.M. ships.

† The Roman rocks light may be seen from near this position, if not from the deck, from the mast head.

Running for Simons Bay in a South-easter.—It is not advisable for a vessel in a strong south-easter to run for Simons bay at night, for the gusts of wind are violent, and there is a risk in bringing up; whereas, by waiting off the cape under low sail till daylight, the vessel will get into Simons bay by 7 or 8 a.m. without risk. The sheet cable should invariably be bent, and the anchor cleared away when entering False bay in a south-easter.

It is perhaps better to shorten sail so as to have all furled when abreast of Noahs Ark, and to round to under the Mizen trysail.

Leaving Simons Bay.—Vessels bound to the eastward should leave the bay when north-westers begin to blow; if bound westward in the winter season, they ought to remain till these winds are on the decline, and get under way when they shift to West, as it is probable they will veer from West to S.W., South and S.E., which will be favourable for doubling the cape.

The COAST between cape Hangklip and Mudge point, 14½ miles to the south-east, forms an indentation: the first part of which is projecting rocky points followed by a sandy shore named Sandown bay. Palmiet river, 9 miles to the eastward of cape Hangklip, is a rapid stream in the winter season, but its entrance is always blocked up with sand. About three-quarters of a mile eastward of the river's mouth is a small rocky cove, where a boat may land at high water, in fine weather.

Mudge point is low and rocky and there are many sunken rocks off the western angle of the point, which, with the masses of kelp about them, form the south side of D'Urban cove, where there is good landing in east and south-east winds.* The gig of H.M.S. *Birkenhead* landed after the wreck of that vessel in a small rocky cove at the south extremity of the sand in Sandown bay, where there is a fishing-station, but the landing at D'Urban cove is the better and safer of the two. A coast range of hills terminates near the point in a square bluff, 1,575 feet high, called Onrust berg, which has a pile on it visible at a considerable distance.*

WALKER BAY.—From Mudge point the coast continues in a south-east direction for 4½ miles to Shel-lime point, and then curves round to Danger point, the south extreme of Walker bay. Danger point lies S. by W. distant 12½ miles from Shel-lime point; the shore between falls back about 6 miles to the eastward and forms Walker bay. The bay is remarkable for the immense tracts of sands and high sand-hills at its head, which are visible a long distance at sea, and give a distinctive character to the land, which would have been aptly expressed by the name Sandown. About midway along the sand and a mile inland is a sand hill pyramid

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* *See* Admiralty chart:—Cape Hangklip to Dyer island, No. 2,571; scale, $m = 1 \cdot 0$ inch.

427 feet above the sea. A long heavy swell always rolls into the bay, and the water is deep within one or 2 miles of the shore.

Kleine river, in the northern bight of Walker bay, is a stream of considerable size inland, but its mouth is choked with sand.*

Stanford Cove, a small rocky inlet, similar to D'Urban cove before described, also affords landing in east and south-east winds. It is in the rocky southern shore of Walker bay, 5 miles north-east of Danger point. There are several rocky patches off it, which, with the heavy swell, renders it less available than Hydra bay.* There is plenty of good water near Stanford cove.

Hydra Bay, 2 miles to the north and east of Danger point, is the best anchorage under that point, as farther in the swell is heavier. The bay is easily distinguished by a sand patch which marks the face of the hillock over it. If coming in from the south-west to anchor in Hydra bay, the pitch of Danger point should not be approached nearer than 2 or 3 miles: the bluff hill of Mudge point may be steered for until the sand patch is well open, when the rocky spit projecting from Danger point will be cleared. Then haul up for the bay, and anchor in 12 or 14 fathoms, about three-quarters of a mile from the shore, taking care to give a 3 fathoms rocky patch in the centre of the bay, upon which the sea does not always break, a wide berth. To clear this rocky patch, keep the low part of Danger point open of the points of coast which are between it and the anchorage.

The *Hydra* anchored in 12 fathoms, with Duin Fontein berg pile bearing E.S.E., southerly; extreme of Danger point S.W. by W. ¼ W.; and the sand patch in Hydra bay S.S.E. ½ E., southerly.*

Tides. — It is high water, full and change, at Dyer island, at 2h. 50m.; springs rise 5 feet. The rise of the tide and the establishment at Simons bay, Dyer island, and Struys bay are very nearly the same, and the stream of tide along the whole coast between cape Hangklip and Struys bay is inconsiderable and uncertain.*

DANGER POINT, S.S.E. ½ E., 27 miles nearly from cape Hangklip, is a tongue of low hummocky sandy land covered with bushes and stunted trees, projecting into the sea about 4½ miles from the base of Duin Fontein berg, which is 1,130 feet high, and a conspicuous, remarkable bluff hill from every point of view at sea. This point affords shelter from the S.E. gales of summer to ships of any size.*

The soundings are irregular off Danger point. If approaching it at night, do not go into less than 35 or 40 fathoms.†

Birkenhead Rock.—Several detached sunken rocks are met with off this part of the coast, the most dangerous of which lies about a mile from the pitch of the point, with 12 feet water on it.* It has acquired a melancholy celebrity as having caused the loss of H.M.S. *Birkenhead* and 436 lives, hence its name. There is a clear channel between Birkenhead rock and the reef of sunken rocks stretching out from the western angle of Danger point. The sea breaks with great violence on the rock, but often only at intervals of about a quarter of an hour.

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* Dayman. † Commander H. G. Morris, R.N., 1854.

DYER ISLAND, S.E. by S. 6½ miles from Danger point, is a low rocky islet, visible only at a short distance. In its centre and higher parts a little spinach grows, and it is the abode of numerous rabbits (similar to the English), gulls, cormorants, pelicans, and penguins, and guano is to be had on the island. Geyser island, one quarter of a mile to the south-west of Dyer island, is smaller and somewhat higher, and the resort, in certain seasons, of seals, for killing which there was formerly a permanent establishment on Dyers island. These islands together with the numerous rocks, extending nearly 1½ miles to the westward of them, form a natural breakwater, under which vessels of any size may find shelter in south and south-east gales.

Landing is not good, and at times impracticable. The best is near a small staff and shed, the marks of a disused sealing station.

Anchorage.—Dyer and Geyser islands, being low and white, are made out with difficulty when seen against the sand hills on the adjacent coast. In approaching them from the southward, the danger to be avoided is the reef of sunken rocks stretching to the westward from the islands, upon which several of H.M. ships have struck, and which is most dangerous in fine weather, when the sea does not break. It will be cleared by keeping the extreme of Danger point on with the valley in the high land near cape Hangklip, until the highest part of Geyser island is in line with Gunners Quoin. Then haul up for Duin Fontein berg (the bluff hill behind Danger point), and when Gunners Quoin is open north of Dyer island, steer for it, and anchor in 10 to 12 fathoms, with the extremes of Dyer island bearing about S.S.E. and S. by W.; Duin Fontein berg pile N. by E. ¼ E.; extreme of Danger point N.W. ¾ N.; and Gunners Quoin pile S.E. southerly.

The bottom is sand, and the holding ground good, but the reef affords no shelter from south-west winds, and the anchorage is safe only as long as the wind is not to the westward of S.S.W.† There is a narrow channel, with a depth of 3 fathoms between the east end of Dyer island and the rock above water inshore, which a small vessel might find practicable under favourable circumstances, but it cannot be recommended, and the sea breaks quite across it in south-east or southerly winds.

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* Commander H. G. Morris, R.N., 1854.

The COAST from Danger point to Quoin point, a distance of nearly 19 miles S.E. by S., is low near the sea, and backed by bare rugged hills of moderate elevation, one of which, called False Quoin, from its shape, is 888 feet high, and about half way between Danger and Quoin points. A long, heavy swell constantly breaks on the shore, which is inaccessible.*

At about 5½ miles eastward of Danger point at the head of the bay formed between the point and Dyer island is the mouth of the Uilkraal river, a small stream, checked at its junction with the sea by sand.

About half way between Dyer island and Quoin point are two rocky patches, 1½ miles off shore, upon which the least water found was 4 fathoms. The sea breaks upon them when there is any swell.

Gunners Quoin (called by the Dutch Buffeljagt berg) is a conspicuous bluff hill, 997 feet in height, named from its resemblance to a quoin, which, however, it does not bear when viewed from the westward. Quoin point is a square projection of hummocky land, from the base of the Gunners Quoin, and is 3 miles from it. It is fronted by sunken rocks and heavy breakers to the distance of 1¼ miles from the shore, and is distinguished, when seen from the southward, by two sand hills near its extremity.

The COAST from Quoin point to cape Agulhas, S.E. ½ E. 18 miles, is low and sandy, except abreast of the flat-topped range of Zoet Anys berg, where the shore is steep and rocky. The whole of it is exposed to the full force of the ocean swell, and landing upon it impossible.

The soundings are shoaler along this part of the coast than they are off, and to the westward of the Quoin; and between 1¾ and 3¾ miles eastward of the south-east face of Quoin point and nearly 1¾ miles from the shore are several rocky patches covered and uncovered.

In standing towards any part of this coast cape Agulhas light should not be lost sight of, and a vessel should stand off before the light disappears on a S.E. by E. bearing. From the westward having passed Quoin point at a distance of 5 or 10 miles, a S.E. ½ E. course made good will round cape Agulhas at a similar distance.

H.M.S. *Hydra* found tolerable shelter and smooth water, in a strong north-west wind, at anchor under the lee of the reefs to the eastward of Quoin point, and it is possible that a small vessel might find the same close under the extreme of the point, between which and the reefs there appears to be a clear but narrow passage.

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* *See* Admiralty chart:—Dyer island to Struys bay, No. 2,572; scale, m = 1 inch.

CHAPTER III.

CAPE AGULHAS TO CAPE RECIFE.

VARIATION IN 1878.

Cape Agulhas - - 30° 20′ W. | Cape Recife - - 30° 10′ W.

CAPE AGULHAS is a rocky projection, the extremity of which is the most southern part of Africa.* The features of the land about cape Agulhas distinguish it from the neighbouring headlands. Viewed from a distance seaward, east or west, the north and south elevations resemble two oblong hummocks. At a distance from the southward the two appear united. The highest part is 455 feet above the sea, and its distance from the cape about a mile. From this point the descent eastward is rather gradual; to the westward it is at first steep, then slightly undulating; it is steep southerly, then undulates to within 300 yards of the shore, where the ground becomes flat.†

On the first undulation from the shore, which is about 55 feet above the sea, and N.W. by W. ⅛ W. 520 yards from cape Agulhas, is a lighthouse, which shows on nearing it from the east or west, but is difficult to distinguish from the southward against the higher land behind, particularly in the afternoon.†

To the westward of the cape, the shore trends in a north-west direction to Quoin point. Immediately to the E.N.E. of the cape are two small indentations, the first called St. Mungo bay; the next is deeper and wider, and the projection which separates them is called St. Mungo point. From the last bay the shore runs jagged to the dangerous projection called Northumberland point, which forms the western horn of Struys bay. The whole of the coast about cape Agulhas and thence to Northumberland point consists of rugged sandstone and quartz rocks, or rocky reef, extending out a third of a mile, and perfectly impracticable for boats to approach.

Exposed to the uninterrupted oscillations of the Southern ocean, the sea breaks heavily all along on this iron-bound shore, particularly during southerly winds. A vessel touching on it has not the slightest chance of escaping destruction.†

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* *See* Admiralty chart:—Cape Agulhas to Mossel bay, No. 2,083; scale, m = 0·3 inches.

† Sir T. Maclear, and Messrs. Carr, Rees, and Skead, R.N., 1848.

LIGHT.—The lighthouse on cape Agulhas is a round tower 100 feet high, painted with horizontal red and white bands alternately. It exhibits a *fixed* white light at an elevation of 128 feet above the sea, and in clear weather should be seen from a distance of 18 miles. The light is visible from seaward between the bearings of West and S.E. by E.

Northumberland Point lies 3⅛ miles eastward of Agulhas lighthouse. It is low and sandy immediately on the beach, but a dangerous ledge of rocks surrounds the point, and shallow water extends in a S.E. ¾ S. direction a mile from the point. There is also a detached rock rock which was fixed by intersection while breaking, which places it S.E. by E. ¼ E. 1⅙ miles from the point, and E. ¾ S. 4 2/10 miles from the lighthouse. Westward of the point the reef extends off about a third of a mile, and the sea breaks heavily with S.E. winds. In one or two places it breaks farther out, but in no place beyond half a mile.*

A bank about a mile in extent north-west and south-east, with 7 to 9 fathoms water on it, lies with its north edge on the parallel of the lighthouse, and distant from it 5¼ miles, and Northumberland point N.N.W. ½ W. nearly. The sea breaks on it in bad weather.

ROUNDING CAPE AGULHAS.—From the Eastward Agulhas light must not be depended upon for passing Struys point. It may be seen, it is true, 5 or 6 miles eastward of Struys point, from a look-out at the height of 35 feet, but in hazy weather or from spray in a fresh breeze, combined with the distance of Struys point (14 miles), the light may be faint or altogether obscured, and the vessel may get within the line of danger. Under these circumstances, the deep sea lead should not be neglected and the depth should not be less than 40 fathoms; a vessel in less water should stand immediately to the southward.†

The like precautions are required in the day time, particularly in foggy weather; for the high land of Agulhas may be invisible, while the sand-hills of Struys bay and the breakers off Northumberland point are distinctly seen. On these occasions it is difficult to determine whether the vessel is to the east or west of Struys point, because the shore features of the bay east of that point are similar to those of Struys bay, although the extent is less.*

Coming from the eastward therefore do not go into less than 40 fathoms, if the light be not visible. On making the light be careful not to bring it to the southward of W.N.W., on which bearing a vessel will pass the dangers extending from Struys point at a distance of 5½ miles.

Whilst to the eastward of cape Agulhas, sailing vessels should not approach the shore nearer than 7 or 8 miles, at which distance the cape should be rounded, for if it falls calm, the heavy swell which constantly rolls towards the shore will carry her with it, and the resource of anchoring would, probably, be of no avail, owing to the swell and the rocky nature of the bottom.*

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* Sir T. Maclear, and Messrs. Carr, Kees, and Skead, R.N., 1848.

Caution.—In rounding cape Agulhas either way, be careful not to mistake the lights of fires for Agulhas light; they are as bright at times.

STRUYS BAY affords shelter in west and north-west winds, but is wholly unsafe in any wind from W.S.W. round southerly to East. It is formed by Struys point to the eastward, and Northumberland point to the west. From opposite the houses in the bay the beach is clean sand to within 2 miles of Struys point, where flat jagged rocks, backed and mixed with sand, commence; behind this sandy beach throughout the whole bay is a line of sand hills, the highest of which is 100 feet above the sea; some are bare, and others are more or less covered with bush (a feature which distinguishes the coast from Struys point to the next point east of it); behind these again is a green covered ridge attaining a height of 200 feet which, at an average distance of 3 miles from the beach, drops suddenly away to a plain extending for 6 or 7 miles to the base of the Driefontein range of hills; this range extends east and west from Bredasdorp.

The white sand is fast encroaching in consequence, it is affirmed, of the destruction of bush by fishing parties. There is no high land sufficiently near to interfere with the distinguishing character of the hills north of cape Agulhas, as viewed from seaward.*

It is well to get a sight of the lighthouse when going into Struys bay, as the bay east of Struys point has often been mistaken for it. The appearance of this eastern bay is precisely similar to that of Struys bay, except that going into the latter, a large whitewashed stone house with a flag staff will be seen, whilst in the bay east of Struys point there are no buildings.†

Anchorage. — The anchorage in Struys bay is at its western extremity under Northumberland point. Vessels from the westward, intending to anchor, may round Northumberland point in 10 fathoms water, at a distance of 2 miles, and when the point bears N.W. by W., and the lighthouse about W. by N. ½ N. distant 5 miles, steer to the N.N.E., and when the stone house bears W.N.W., haul into the bay.

Or, be careful not to bring the lighthouse to bear more westerly than W. by N. ½ N. until Northumberland point bears N.W. ½ N. Then steer N.N.E., which should lead half a mile clear of the outer detached rock off Northumberland point; when the stone house above mentioned bears W.N.W., steer to the N.W., and anchor in 5 fathoms sand, with the large stone house near the beach W. ½ S., and the sandy extreme of Northumberland point S.W. by S. Here the bottom is clear, while to the westward, and nearer to the reef, where the water is smoother, the bottom is foul, being composed of rocks interspersed with patches of sand. Large vessels are recommended to anchor farther out in 7 fathoms.

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* Sir T. Maclear, and Messrs. Carr, Rees, and Skead, R.N., 1848.

† J. Belam, Master, R.N., 1852.

The light will not be visible from the anchorage owing to the rise of the intervening land.*

Caution.—With strong winds from S.W. round southerly to East it is unsafe, if not impossible, to ride into Struys bay. The sea often breaks in the bay in 7 and 8 fathoms water. It has been the scene of several disastrous wrecks, and it cannot be recommended, except as a temporary anchorage in west or north-west gales.

As a general rule, vessels seeking shelter in this bay in a N.W. gale should put to sea immediately after it subsides, for the wind frequently changes in a few hours from blowing strong at N.W. to S.E. or South, in which case it is very difficult to work out, in consequence of the heavy sea which rises with winds from the latter quarters.*

Landing.—The landing place is a small cove to the north-west of Northumberland point, sheltered by a shelf of shingle projecting from each extremity of the cove, but it is fast filling up with sand; a wooden jetty at the end of which a vessel drawing 7 or 8 feet formerly secured is now dry. The large stone house seen between the two store houses leads in between the breakers.† The bar of this boat harbour does not break heavily, and when inside the water is perfectly smooth, and landing excellent.†

Water.—There are several wells, but the water is scarce and brackish; it is procured only by digging in the sand beach above high water mark.

Bredasdorp.—The village of Bredasdorp is 16 miles or three hours' journey distant from the landing place in Struys bay, where supplies can be obtained and where there is postal communication with Cape town.

Honing Nest or Matjies River.—This river runs into Struys bay near the centre between bare sand hills: it is the outlet of many streams flowing from the hills northward and westward for many miles which form often into lagoons in the flat described as lying behind this coast, flowing sluggishly and under various names with its tributaries as the Honing Nest, Kars, and Nieuw-jaar, until they unite and form this river: it is unimportant and usually fordable three-quarters of a mile from the mouth and often at the mouth, but is dangerous.‡

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* Maclear, Skead, Carr, and Rees.

† Captain J. Foote, R.N., 1847.

‡ The information from Struys bay to Breede river is by Nav. Lieuts. D. J. May, and W. E. Archdeacon, R.N., 1866–68.

Tide and Current.—It is high water in Struys bay, full and change, at 2h. 50m.; springs rise 5 feet. During the examination of this part of the coast, in September 1848, no current was observed in the bay, or about the coast 2¼ miles from the shore; but it was asserted by fishermen and the residents at Struys bay, that a very strong current frequently sets to the westward round Northumberland point. A ship, becalmed in the offing, was seen from the anchorage in this bay drifting to the eastward more than a knot an hour. On two other occasions, close to the shore, about 2 miles to the westward of cape Agulhas lighthouse, the stream ran through the whole night steadily to the N.W. at 1¼ knots per hour. These changes may probably be traced to the effects of the wind.*

Several accounts concur in stating that eastward of cape Agulhas the current has been found to set towards the shore. We have found it so on three occasions when passing the cape.

STRUYS POINT, is formed by a conspicuous mass of bare sand hills 200 feet high, sloping southward for nearly a mile to low-water mark, where it is rocky; from the point a chain of reefs or detached patches of rock extend in a S.S.E. direction, the outermost visible at low water being 1¾ miles from low-water mark or 2$\frac{4}{10}$ miles from the summit of the sand hills. On the outer detached rock, which is locally named the Blinder, there are 18 feet at low water, with 4 to 6 fathoms close to the rock, and 7 to 9 fathoms at a distance of 4 cables to seaward. The Blinder rock lies S.S.E., distant 1$\frac{8}{10}$ miles from the beacon on the Struys point.

To the northward, in the direction of Struys point and 3 cables from the Blinder rock is the Bulldog or Saxon reef, with 12 feet on it at low water, and 8 fathoms close to, but with shoal ground—about 4 fathoms—between it and the Blinder rock. Between the Bulldog reef and Struys point, the chain of reefs are shoal and extensive, with boat passages between in fine weather. The fishermen state that the whole of this line of coast, from Struys point towards Martha point and to the eastward, is fringed with a series of reefs on which the sea breaks in heavy weather, with depths varying from 4 to 6 fathoms; there are passages between the reefs and deeper water inside of them.

In standing towards these dangers from the south-east, cape Agulhas light will become invisible on a bearing of W. ¼ N., that line of direction passing more than 3 cables to the southward of the Blinder reef.† The colour of the water off this point changes to seaward from brown to light, then dark green, from which it may be inferred that the lead will give warning on approaching the point.

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* Maclear, Skead, Carr, and Rees.

† In consequence of the many disastrous wrecks in the neighbourhood of Struys point near cape Agulhas, and of the reported inaccuracies of the existing charts and sailing directions, a close examination of the coast and outlying dangers from Struys point to Hoop point, including the Atlas reef, was made by Nav. Lieut. W. E. Archdeacon, of the Admiralty survey, March 1872, in H.M.S. *Dido*, Capt. William C. Chapman. The experienced fishermen of the locality who assisted Nav. Lieut. Archdeacon

Beacon.—A stone beacon 34 feet high, 10 feet square at base, and 6 feet at top, surmounted by a copper ball 4 feet in diameter, is erected on Struys point. The beacon is coloured red to seaward, with red and white bands on the east and west sides, and stands about 2 feet above high water spring tides.

H.M. ship *Dido*, in March 1872, anchored in 23 fathoms, with the beacon on Struys point bearing N.N.W. distant $2\frac{9}{10}$ miles; but the wind freshening from the south-west after the examination of the dangers off that point, the vessel weighed and found good shelter to the eastward of Struys point, where she anchored in 11 fathoms; the beacon on the point bearing West distant $1\frac{3}{4}$ miles.*

COAST.—From Struys point the coast trends about N.E. by N. for nearly 2 miles and then in an East direction, forming a bay not unlike Struys bay in size and appearance, but here there are no buildings seen, and it has rocky points jutting into it; along the first 2 miles are alternations of sandy beach fringed with low flat jagged rocks, and prominent rocky points, with offlying rocks throughout; landing is difficult; fishermen live near and beach their boats on one of the sandy beaches in ordinary weather. Just within Struys point at the first rocky point is a remarkable cave into which the sea washes at high water; it is nearly circular, about 50 feet in diameter, with a concave roof 12 to 20 feet high in the centre.

The bay has rocky patches in it; but it affords shelter in westerly and north-westerly winds equal to that of Struys bay.

HOOP POINT, about $5\frac{1}{2}$ miles eastward of Struys point, is but little salient, and 5 miles farther on is Martha point.

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in his examination of these dangers all agreed as to the Blinder rock being the outer danger from Struys point: from this fact and the close examination made at the time, as also from observations made during a south-east gale, which afforded a good opportunity for deciding the extent of the breakers, it is certain that the limits of the dangers extending from Struys point as above described are accurately defined, and that there is no foundation for the report that these reefs are found at a distance of 6 miles from the shore.

* Nav. Lieut. Archdeacon remarks, that it is certain that the vessels which have been recently wrecked in this locality struck on, or in the vicinity of the Bulldog or Saxon reef. In the case of the *Benefactress* it was stated that the lighthouse was invisible, and in that of the *Saxon* that they opened the light a few minutes after hauling to the southward to get clear of the reef on which the vessel had struck; which would agree with the inshore limit of the light on cape Agulhas, as given in the chart.

The shore following the 2 miles already described, is a sandy beach with a fringe of low flat jagged rocks rendering it unapproachable; it is backed by sand hills, some of which are bare and others partially covered with bush, they reach 150 feet in height; the sand is but a covering, rocks crop out from them, and their bases when washed by high water are all rocky; behind these sand hills is a range of green covered hills which drop on to the flat behind at 2 to 3 miles distant from the coast. Martha point is so called from the name of a vessel wrecked here: it is the scene of more wrecks than any other part on the south coast of Africa, and the beach is strewed with their remains.

ATLAS REEF, named from the Dutch ship *Atlas*, which was wrecked on it eastward of Hoop point, lies 1$\frac{4}{10}$ miles from the shore, with Struys point bearing W. ¼ S., distant nearly 7 miles, and a triple isolated peak inland N.W. ½ W. The peak on this bearing appears like a cone. The reef has, beyond doubt, as little as 3 fathoms water on it, but although assisted by fishermen of the locality, the shoalest part of 3 fathoms was not found, nothing less than 5 fathoms water being obtained; the position of the Atlas reef was however determined, and another rock with 4 fathoms on it named the Miles Barton, at a distance of about 6 cables from the Atlas reef, in the direction of Struys point.*

Vessels should not approach this part of the coast at night nearer than 7 or 8 miles, or stand into a less depth than 40 fathoms, sandy bottom.

COAST.—From Martha point where the coast is gradually rounding, it begins to trend to the northward, and 3 miles beyond it is a large mass of bare sand hills, a broader sand beach, and fewer of the flat jagged rocks fringing it; this continues for about 5 miles; then the coast becomes again rocky, interspersed with patches of sandy beach especially between high and low-water marks, the bare sand hills disappear, green covered and higher ones front the beach and the Driefontein range becomes inclined to the coast. At 13 or 14 miles from Martha point the front hills disappear and the Driefontein range forms the coast line, intersected by deep watercourses. Behind the Driefontein range and nearly parallel is the higher Potteberg range; the former terminates at the sea westward of cape Infanta; the latter, the highest point of which is 1,980 feet high and 5½ miles from the nearest beach, slopes thence S.E. ½ S. for 16 miles and then forms cape Infanta.

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* The *Miles Burton* was wrecked in February 1861, in Marcus bay, on a rocky ledge off Hoop point, 6½ miles eastward of Struys point. Here the shoal water appeared to extend 1½ miles from the beach. H.M.S. *Cyclops*, who went to her assistance, anchored in 4¾ fathoms, at about 1½ miles off Hoop point, with Struys point bearing S. 87° W. distant 6 or 7 miles. The shipwrecked troops (who had got on shore) were embarked from a cove just to the eastward of Struys point.

Hoop Lake.—At 1½ miles from the beach and 4½ miles eastward of Martha point is the south end of Hoop lake, of brackish water, which extends thence N. by W. nearly 4 miles, where the river supplying it, flows from between high hills (the Driefontein range); the lake is irregularly shaped with an average breadth of a quarter of a mile, and is shallow throughout. Its west bank is low and flat, being the boundary of the flat extending far to the westward and enclosed between the Driefontein range and the hills near the coast; its east bank is cliffy, and near it is the farm of Mr. Gabriel de Wet. This lake, the accumulation of several streams, has no apparent outlet, and varies in depth according to the season.

CAPE INFANTA is a bold cliffy rocky point E. by S. ¼ S. 24 miles from Martha point; the coast between forms one continued sweep, but not deeply concave. There is a double point with remarkable masses of rock about one mile westward of it, and more farther on.

Danger.—In the vicinity of cape Infanta the coast is rocky and cliffy with a number of small bays. A well known sunken rock, called the Blinder, a name very commonly given to sunken rocks on this coast, lies about one mile to the southward of cape Infanta; its correct position has not been ascertained, and it only breaks after heavy gales; so caution should be used here, especially by vessels rounding this cape bound into or out of Sebastian bay.

Still Bay.—From cape Infanta the coast trends suddenly N.E. by N., and at the distance of one mile is Still bay, the mouth of a deep ravine, with a beach of large rounded stones; here fishermen can usually launch and beach their boats; it is the only landing place for many miles along the coast, it can often be used when unsafe to cross the bar of Breede river.

St. SEBASTIAN BLUFF.—At the distance of 2¼ miles N.E. by N. of cape Infanta is St. Sebastian bluff, a bold perpendicular headland, 220 feet high, forming the southern limit of St. Sebastian bay; a ledge extends from the point, and vessels bound to or from Breede river should not approach it too closely; there are 5 fathoms water, a quarter of a mile off the ledge.

St. Sebastian Bay.—Vessels bound to Breede river anchor here to await the tide, it is good anchorage and in the western part affords shelter with all winds except those from about East to South. The best anchorage is within the following limits, St. Sebastian bluff, S.S.W. to S. by W., the high flagstaff on the low sand hills at the right or south bank of the mouth of Breede river N. by W. ¾ W. to N.N.W. ¾ W., in 8 fathoms, sandy bottom; the water shoals gradually to 4 fathoms at a quarter of mile from the shore.

At St. Sebastian bay the cliffs cease and the land around the bight of this bay becomes lower, but deeply intersected for three-quarters of a mile from St. Sebastian bluff, when it slopes gradually to the shore and has a frontage of sparsely covered sand hills to the mouth of the Breede river, which is 1¾ miles north of St. Sebastian bluff.

About 6 miles off shore the depths are 36 and 38 fathoms. To the northward of the bay there is a flat table hill, and farther to the north-eastward a mountain with a hummock on it resembling a cupola.

BREEDE RIVER falls into the sea in St. Sebastian bay, about 4 miles northward of cape Infanta through a mouth narrowed by sand banks to 160 yards at low water; within it immediately widens to three-quarters of a mile, though for 3 or 4 miles of its course its navigable channel is intricate and varying, but quite safe; above that it contracts and flows evenly between steep banks. For 48 miles from the mouth the general direction of Breede river is north-westerly, but tortuous; at that distance Buffeljagts river, a stream from the mountains 9 or 10 miles distant, flows into it; beyond this confluence the Breede flows from the west, passing close to the town of Swellendam, near which the main postal road crosses the river, which point is 61 miles by the river from its mouth; at 8 miles farther on it is joined by the river Zondereinde.

The river Zondereinde flows from the west for many miles beyond its confluence with the Breede, the main postal road in the colony being along its banks. Beyond this confluence the direction of the Breede river is again north-westerly, through one of the most productive districts of the colony, passing in its course near the towns of Robertson and Worcester. It is probable that this river could readily be made available for transport from Swellendam to its mouth, whilst throughout it affords ready means of irrigation. Breede river is the most important navigable river in this colony, a steam vessel drawing 8 feet has often ascended it to Malagas, which is 20 miles by water from the mouth.

The Bar.—The southern side of the mouth of Breede river, is formed by low scant covered sand hills, on the top of two of them are flagstaffs, which in line N.W. ¾ W. lead over the bar; the beach is fringed with rocks. The northern side of the mouth is formed by a long low sandy spit projecting southward from the foot of a conspicuous mass of bare sand hills, with shallow water extending nearly half a mile outside it.*

Directions.—Sailing vessels can only enter the river with a fair wind. The bar should be approached at the last quarter of the flood, and having brought the flagstaffs in line, N.W. ¾ W. steer for them, which will lead over the bar in 10 to 11 feet in ordinary tides; after deepening the water, open the inner flagstaff a little to the right, and keep close to the rocks on the south shore, this will lead to abreast the flagstaffs, close to which and on the beach will be seen a house. Still keeping on the same shore and a little farther in the narrowest part of the channel will be reached abreast the spit end, when it turns suddenly to the northward: the breadth is here 160 yards at low water, and a vessel may anchor in safety. As the channel thence to the jetty at port Beaufort is varying no reliable directions can be given. A pilot is always ready and should be taken on board in St. Sebastian bay.

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* *See* plan of entrance to Breede river, and port Beaufort, on chart No. 2,083.

Tides.—It is high water, full and change, at the jetty at port Beaufort at 3h. 8m., springs rise 6 feet.

PORT BEAUFORT is a trading settlement on the left bank of Breede river; loaded vessels cross the bar drawing 11 feet and lie alongside a jetty. The value of exports from this port is about 20,000*l.* a year.

Supplies are readily obtained except water, which has usually to be brought down the river in boats from a distance of 20 miles or less according to the season, though sometimes it is fresh at port Beaufort.

There is a postal communication with Cape town twice a week.

Currents.—Between cape Agulhas and cape Infanta is the scene of a large proportion of the wrecks which occur on the south coast of Africa. From an examination of these cases and information from navigators on this coast, it seems certain there is an indraft, and the opinion is entertained that it is stronger during the season of the year from January to April.

The coast is dangerous and should ever be approached with caution; where it is not cliffy, rocky, or iron bound, it is sandy and mostly treacherous with low flat rugged rocks not to be seen from seaward, and detached off-lying patches, these latter are only imperfectly known.

Vessels beating round cape Agulhas in strong north-westerly winds would find it safe and profitable to anchor in St. Sebastian bay, Marcus bay east of Struys point, or Struys bay, being prepared to weigh on a shift of wind.

The COAST from the entrance of Breede river trends S.E. ¾ E., forming a slight indentation to cape Barracouta, a distance of 22 miles. It is composed of cliff-faced hills, ranging from 60 to 200 feet high; about 7½ miles eastward of the Breede the little river Duivenhoks disembogues, a conspicuous sand patch on the west marks its entrance, and 4 miles inland is a hill named Wolfskloof, 744 feet high. About 2 miles north-west of cape Barracouta is a conspicuous sand patch, and 3 miles farther on in the same direction is another: the coast line from this latter patch round the cape eastward to Kaffir Kuyl bay is irregular, with several projecting points, of which Morris point, 6½ miles eastward of the cape, forms the south point of Kaffir Kuyl bay, and halfway between is Leven point. At 6½ miles north of the cape Tromps Kop hill rises 959 feet above the sea.

KAFFIR KUYL BAY (pronounced Kaffir Kulse), about 4 miles to the eastward of Leven point, is open to seaward from E.SE. to S. by W., and is therefore unsafe for the resort of trading vessels during the season of south-easterly winds; but in winter, when westerly winds prevail, cargoes may be safely landed or shipped.*

The anchorage is sheltered from the south-westerly swell by a reef which projects about half a mile to the southward from Morris point. It appears to be clear, with regularly decreasing depths of from 10 to 4 fathoms, with a bottom of sand and broken shells. The best anchorage is in 6½ fathoms, about one-third of a mile from shore, with Morris point bearing about S.W. by W.*

The Kaffir Kuyl river is insignificant, and has a bar which is nearly dry at low water.† There is a good landing-place in fine weather in the rocky cove at the mouth of the river, but the landing might be improved by projecting a stone pier from the eastern point of the cove.*

Tides.—It is high water in Kaffir Kuyl bay, full and change, at 2h. 55m.; springs rise about 6 feet.

COAST.—The shore following Kaffir Kuyl river is a sandy beach for about 2 miles when it rises, and trends in a S.E. by E. direction for 12½ miles farther to Izervark point; it is skirted all along with reefs, on which the sea breaks. Izervark point is bold and rocky, with a hill, Buffels Kop, 740 feet high, rising about a mile N.N.E. of it; and a round bare sand hill, 200 feet high, close to the sea, 1½ miles west of it, terminates the sandy feature of the coast between Kaffir Kuyl river and the point.‡ Aasvogel berg, a long elevated mountain, 1,620 feet high, also rises N. by E. ½ E., 11½ miles from the point, and may serve to identify it.

Between Izervark point and cape Vacca, 10 miles farther eastward, the coast consists of rude jagged rocks, on which a heavy sea is constantly beating. The land immediately at the back slopes to the height of 700 to 500 feet, and is covered with vegetation. Bull point, 3½ miles eastward of Izervark point, is not easily distinguished, being only a slight projection from the general line of rocky shore; at half a mile westward of it is a small but remarkable sand patch of a reddish colour; and South three-quarters of a mile from the patch and one-third of a mile off shore, are patches of detached reef which break and show at low water. At 1½ miles from this rocky coast the soundings range from 30 fathoms off Izervark point, to 20 fathoms south of cape Vacca.

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* Lieutenant J. Dayman, R.N., 1845. *See* plan of Kaffir Kuyl bay on chart No. 2,083.

† Commander H. G. Morris, R.N., 1854.

‡ The description of the coast from Izervark point to the Great Brak river in Mossel bay, is from the survey made by Francis Skead, Master, R.N., in 1862-63.

Gouritz River falls into the sea at 1⅓ miles westward of cape Vacca. There is a sandy beach on the western side of entrance, but the breakers are generally too high to make it available as a landing place for boats. The sea breaks across the river's mouth, which at the outer part is half a mile wide, but at half a mile inside it is only 10 to 15 yards wide.

CAPE VACCA, bearing about W. ½ S. 15 miles from the lighthouse on cape St. Blaize, is the extreme of a low flat of rock and shingle jutting out from a round hill which rises over the eastern side of entrance to the Gouritz river, 1⅓ miles westward of the cape. In rough weather the sea breaks half a mile outside the cape, at which distance the depth is 9 fathoms. From the discolouration of the water, and the uneasy ground swell in the vicinity, it is more than probable that shoal rocky ground exists there.

Care must be taken in rounding this low cape at night, as from it the light on cape St. Blaize is only just within the range of sight; it might, however, be seen from aloft. The line of visibility—the light bearing E. 10° N. magnetic—passes only a little more than half a mile outside it. If the light is not seen, the lead will be the best guide either at night or in thick weather.

FLESH BAY is formed between cape Vacca and Flesh point, which bears from the cape N.E. by E. ¾ E. distant 2⅔ miles. The shore of the bay is sandy, save at the extremes, which are rocky. About the middle of the bay there is a bare sand hill, 271 feet high, just over the beach.

This bay affords no shelter for vessels, save as a temporary one in northwest gales, and it can only be used as a landing place in tolerably fine weather.[*] Flesh point may be known by a flesh-coloured patch of sand. It has several indentations with summits of a reddish colour. The point is bold-to on the eastern side, and may be approached to the distance of a cable.[†]

In 1862 cattle were not to be had, the inhabitants living entirely on sheep.

FISH BAY is formed—by a curve 3 miles deep in the coast line—between Flesh point and Pinnacle point, which bears E. ¾ N. distant

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[*] The island, and the facilities this bay afforded for procuring fresh water and cattle mentioned by Van Keuten and the early Dutch navigators, no longer exist. There is no island in the bay, and very little fresh water is found near to the sea, and that is brackish.

[†] Commander W. E. A. Gordon, R.N., 1859.

9 miles, and is the well-defined commencement of the rocky cliffs extending 4 miles westward from cape St. Blaize. The whole of this shore is sandy, with small patches of rock showing about low water and through the breakers which are generally high. The land at the back, at the distance of a mile, rises 400 to 500 feet in height, and is covered mostly with bush and vegetation.

Fish bay may be used by vessels seeking shelter from north-west gales. The best anchorage is 1¼ miles off the sandy shore in 7 to 8 fathoms, Flesh point bearing about S. ½ W., and the extreme of the bluff cliffs near cape St. Blaize E. ¼ S. It is advisable for vessels to put to sea as soon as the gale subsides, for then a heavy south-west swell sets in and causes a dangerous breaking sea. The best landing is near Flesh point, in a small sandy cove between rocks; but in fine weather boats may land in the bight under a farmhouse.

CAPE ST. BLAIZE.—The 4 miles of coast between Pinnacle point and cape St. Blaize consist of precipitous rocky cliffs of a reddish colour, about 250 feet high, with deep water close-to, and quite impracticable for boats landing. The eastern extreme of these rocky cliffs is a bluff, upon which, at 500 yards from the sea, is a square white light tower, 45 feet high, with buildings at its base for the light keepers; just beneath the bluff is a remarkable whitewashed rock, the Logan stone, poised upon natural supports. A windmill stands on the high land near the bluff, but it is only visible to vessels approaching from the southward or the eastward.

Cape St. Blaize itself is the east extreme of a tongue of low flat land, fronted by rugged reef jutting into the sea 500 yards from the lighthouse bluff. A sunken rock, with 15 feet over it, called the Blinder or Windvogel, lies a quarter of a mile outside the cape, being separated from the cape by a narrow 5 fathoms channel; the sea breaks on the rock at low water and in rough weather.

Vessels proceeding westward from cape St. Blaize should be careful not to shut in the light, its line of visibility being E. 10° N. which passes only half a mile outside cape Vacca; nor should they stand into less than 25 fathoms water. Those well acquainted with the coast may stand into Fish bay for smooth water in working westward, but the lead must be the guide, and 20 fathoms the limit, within which none but coasters should be found.

LIGHT.—The light tower on cape St. Blaize exhibits at an elevation of 240 feet above the sea, a *fixed red* light, visible from seaward when bearing between E. ¾ N. and N.N.W., and in clear weather should be seen from a distance of 15 miles.

MOSSEL BAY.—From cape St. Blaize the coast takes an abrupt trend to the N.W. by N. for about 3 miles, still retaining its rocky feature; it then curves to the north-east for another 3 miles, with a sandy beach to the Hartenbosch river, and then 2 miles farther on to the Little Brak river, a line from which to cape St. Blaize may be considered as the limit of Mossel bay. A little to the N.E. of Hartenbosch river the sand is bare and elevated and extends to and beyond the mouth of the Little Brak. This sand is conspicuous and useful for strangers from the eastward in identifying the bay, and from the westward for clearing the Blinder rock when rounding cape St. Blaize. At 2¾ miles N. by W. from the lighthouse, and one-third of a mile from the sandy shore at the head of the bay, is Seal island, a small rocky islet about 15 feet high, with deep water around it, and 3 to 5 fathoms between it and the shore.*

Mossel bay affords excellent shelter to vessels during the winter months, April to September, when heavy north-west gales are of frequent occurrence, and it is far preferable to use it as a place of shelter than to buffet the sea about cape Agulhus. During the strength of these gales the water in the bay is smooth, and ships ride well, but it sometimes happens that a heavy south-west swell sets into the bay if the wind veers to West and W.S.W., and this renders the bay unsafe, and landing very difficult and at times almost impracticable.

In winter south-easterly winds are unfrequent, moderate, and of short duration. The heaviest gales during the year are from W.N.W. Winter gales commence from N.N.W. with heavy gusts, unsteady both in direction and force, then veering to W.N.W. or West. They blow very hard in continuous gales, with a low barometer (29·6 inches), finally shifting rather suddenly to S.W., when they subside with steady breezes and occasional showers.

During the summer season, September to April, when south-east gales occur, the bay is exposed to the full effect of the open sea, but these gales seldom last longer than 36 hours, and do not blow home. A heavy breaking sea then rolls in, and vessels trading to the port usually ride with a long scope of cable, with a coir or hempen spring to ease the strain on the cable; with this precaution vessels ride safely, and the holding ground is good. As in Algoa bay, there appears to be a strong easterly current or *undertow*, which assists to ease the strain on the cables. Should a vessel, however, not wish to risk riding out a south-easter, by putting to sea early she will be well able to clear cape St. Blaize by first making a long board to the eastward, in which she will be assisted by the *undertow*. It has been found that a rise of the barometer usually precedes a south-easter, and that the increase of the wind is gradual at the commencement. Moderate south-west winds even at this season of the year are very common.

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* *See* Plan :—Mossel bay, No. 639; scale, *m* = 2·2 inches.

The south shore of the bay, for 3 miles north-westward of cape St. Blaize, is rocky, with the exception of three sandy coves, the outer two of which are called Vaarkens and Mauro bays. In the former of these coves is a substantially built jetty, and it is here that landing is generally effected, but the rollers render it almost impracticable at times, endangering even the jetty itself. With a small outlay in making a rough stone pier from the outer point of the cove, to protect the jetty from the breaking sea that sometimes comes in, landing might be effected in almost all weathers.

Town of Aliwal.—On the rising ground over Vaarkens bay is the town of Aliwal, which consists of numerous houses, the greater number substantially built, an episcopal chapel and a Dutch church; various other buildings are in course of erection. The resources of trade and produce in the interior have been opened to this port by the formation, in 1858, of a road called Meirings Poort through a gorge of the Zwaartberg range of mountains, and a thriving commerce is the result. The population of the town may be about 2,000. The civil establishment is composed of a resident magistrate, a collector of customs, a district surgeon, and a small police force. An episcopal clergyman and a minister of the Dutch reformed church are resident.

There is also a harbour master and an accredited agent for Lloyd's. Several eminent mercantile houses are established, and there are three three and many provision and retail stores. Postal communication is maintained with the extremity of the colony, the mail cart departing from the town three times a week and arriving in Cape town in thirty-six hours; it is in contemplation to erect a flagstaff at the lighthouse on cape St. Blaize, so that vessels wishing to be reported, may have information sent by electric telegraph either to Cape town or port Elizabeth. Ships' boats may land either at the jetty or on the beach. No port charges exist.

In 1875, 111 vessels amounting to 68,437 tons entered inwards, foreign and coastwise; and 108 vessels amounting to 69,220 tons cleared outwards, foreign and coastwise. In the same year the value of the imports was 126,206*l.*; and that of the exports 111,045*l.*

Supplies.—Fresh water is supplied, at the rate of about 30 tons a day, from a pipe at the jetty end in Vaarkens bay. Fresh provisions and vegetables are to be had in any quantity.

Anchorage.—The anchorage in Mossel bay is abreast the town of Aliwal, between a line drawn from cape St. Blaize lighthouse through a conspicuous building with a double gable point, and the only house near the cape, bearing S.S.W. ½ W.; and a line drawn from the windmill through

Barry's store (a large two-storied stone building standing on the mound close to the sea at the west side of Vaarkens bay) bearing S. by W. ½ W. Small vessels may anchor in this space in 3½ to 4 fathoms, with the outer low point visible, bearing between S. by E. and S.E. by S.

Vessels seeking shelter should not go inside a depth of 6½ or 7 fathoms, in either season of the year. The windmill in line with the new jetty is a good line for strangers to anchor on, suiting the depth of water to the size of their vessels and the object they have in visiting the bay. Vessels intended to load or unload may take a berth more to the westward, not going, however, within the line of the windmill and Barry's store already mentioned. Ships of war should not anchor in less than 7 fathoms, during the summer months, the lighthouse bearing S. by W. ¼ W., nor in less than 5½ to 6 fathoms in the winter, the lighthouse bearing S. ¾ W.

Tides.—There is no regular stream of tide in Mossel bay. It is high water, full and change, at 3h. 30m., and the rise 6 to 7 feet.

Directions.—Approaching Mossel bay from the westward, the lighthouse bluff of cape St. Blaize will be conspicuous, the land at the back being quoin-shaped and somewhat resembling the Bill of Portland. Give the cape a berth of half a mile or more in rounding to avoid the Blinder rock, to clear which keep Pinnacle point open south of the cliffs just westward of the lighthouse bluff, W. by N. ½ N., until the large patch of sand at Hartenbosch river bears N. ½ E., or until the large whith stone beacon, which stands 500 yards north-west of the lighthouse, comes open northward of the Logan Stone.

Coming from the East or S.E., cape St. Blaize is more difficult of recognition, as the land shows on each side of it, but it may be identified by the lighthouse, which being white shows conspicuously against the dark background; also by the Logan Stone, which is also white; by the windmill on the bluff, and by the remarkable sand patch at the mouth of the Hartenbosch river.

The COAST from Hartenbosch river—4½ miles to the northward of cape St. Blaize—to the mouth of Great Brak river, a distance of 5 miles, is a sandy beach, backed by a line of sand-hills 100 to 150 feet high, and dotted with bush. North-eastward, 2 miles from Hartenbosch river, is the mouth of Little Brak river, which is of quicksand, and therefore very dangerous. A few yards within the river's mouth there is a safe ford, and at nine-tenths of a mile there is pontoon for the passage of vehicles pursuing the main postal route between Mossel bay and George town and the interior.*

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* *See* Admiralty chart:—Mossel bay to cape St. Francis, No. 2,084; scale, $m = 0{\cdot}8$ inches.

Great Brack River.—The mouth of this river lies about N.E. by E. 8½ miles from cape St. Blaize. It runs into the sea between sandy hillocks, 80 to 150 feet high, and which are mostly covered with scant bush. The beach is sandy, and fringed with low rocks, which cover and uncover. Just to the eastward, this sandy beach becomes free from rocks, and is still backed by sandy hillocks for 3 miles farther, when the rocks again appear upon the beach. The sand hillocks disappear, and the coast becomes shelving and cliffy to the mouth of Mal Gat river, which is 5½ miles nearly from the Great Brak river mouth.*

Mal Gat River is an unimportant stream flowing into the sea between high cliffs. The water is good, but remarkable for its dark-red colour; the mouth of this river is frequently closed with sand. A little westward of the mouth, and a mile from the shore, there is a 10-fathoms patch, the depths around and inside of it being 18 to 20 fathoms. A mile and a quarter eastward of the mouth is a conspicuous cluster of off-lying rocks, all within one-sixth of a mile from the shore. The land at the back slopes gradually from a height of 720 feet to the sea, where it presents a rocky unapproachable shore. There is a small sandy beach immediately eastward of these off-lying rocks.

Dutton Cove, 3½ miles eastward of Mal Gat river, and East 15½ miles from cape St. Blaize, is a slight indentation in the coast, in which lies a rocky islet, and where, but at a considerable expense, a very small space affording security for small craft might be constructed. At present it affords no shelter.

Gayang River after a course of 5 or 6 miles between high lands empties itself into another small indentation; though its mouth is often closed. Its water is good, and of the same dark colour as the Mal Gat. Great Brak, Mal Gat, and Gayang rivers take their rise in the Outeniqua range of mountains, 4,000 to 5,000 feet high, upwards of 10 miles from the coast; they have formed deep channels for themselves across the elevated plateau, extending to the sea coast.

The COAST.—From Great Brak to Gayang river the coast has a uniform direction S.E. by E., when it takes a easterly trend for 4 miles to Schaapkop river, next to which is Mill river and Christina bay. The coast thus far continues rocky and unapproachable, the background high grazing land with patches of bush or small trees.

Christina Bay.—Another spot in which an attempt has been made to make it available as a landing-place, from its nearness to George town; but it is quite impracticable. A fishing establishment was tried here, but without success; it is simply the embouchure of Mill river, which flows between steep, close, wood-covered hills. The beach is covered with large smooth stones.

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* The information relating to the coast from Mossel bay to Groote river is by Nav. Lieut. F. W. Skead, R.N., 1865–75.

Victoria Bay lies half a mile beyond Christina bay. It is a broader indentation than the other, but is shallow, with a sandy beach, where landing may at times be effected; but no vessel should attempt to enter it.

Cayman River flows to the sea one mile to the north-eastward of Victoria bay. This river, like the others, is of no navigable importance; within a mile from the mouth the waters of Zwarte river join it. From the height of the adjacent woodlands, and the depth and windings of the stream in its rocky course, this spot forms a picturesque and romantic piece of scenery. The river is fordable at the confluence, and is called Cayman Gat.

A little beyond Cayman river the cliffy coast ceases, the high land recedes, leaving an interval occupied by a chain of lakes (into which the various streams of the locality flow), fronted by the sandy hillocks of about 200 feet in height, which here recommence. The beach is sandy, but rugged low rocks cover and uncover at frequent intervals along it.

Touw River.—The mouth of this river lies a little more than a mile to the eastward of Cayman river. It takes its rise in the Outeniqua mountains, bursts from between high lands, and forms the first of the lakes, Lange Vlei, upwards of a mile in length and of lesser varying width flowing again out of it as a river, and into the sea across the sandy beach; its mouth is often closed by sand.

COAST.—From the mouth of Touw river the coast trends south-eastward about 21 miles to Walker point, which forms the west horn of Buffalo bay, and which is 4 miles westward of Knysna harbour. For nearly 2 miles the beach is sandy, with scattered flat rocks, mostly at and below low water, backed by a ridge of irregular sand-hills, about 250 feet high. Here there is a point of jagged rocks; the hillocks change from sand to stone; the sandy beach continues to the south-eastward, with fewer rocks above low water, for 4½ miles, when it becomes permanently rocky, and the stony hills increase in height to 300 feet. Thence the rocky beach extends to Gericke point, 2½ miles farther on, the sandy and stony hills are followed by continuous cliffs of a reddish colour, averaging 500 feet in height, the land at one mile behind rising as high as 600 feet; it is not wooded.

Gericke Bay, 9½ miles from the mouth of the Touw, is unimportant in size, and with an apparently foul bottom; a rocky islet lies off its point, and small rocks outside the islet, but all that uncover lie within half a mile. The rocky coast continues round this point for three-quarters of a mile, when the sandy beach again appears for a short space, across which Zwarte Vlei empties itself into the sea at certain seasons.

Lakes.—From the mouth of Touw river to the mouth of Zwarte Vlei is upwards of 11 miles. Behind this extent of coast at varying distances to 3 miles, are the three lakes, Lange Vlei, Rond Vlei, and Zwarte Vlei. The first is composed of two parts, with channels connecting them, and extending 6 miles in all. The water is brackish, and has a maximum depth of 22 feet. The Walve and the Touw rivers are the principal, but not the only feeders of this lake.

Ronde Vlei, so named from its shape, is almost circular, with an average diameter of half a mile; it communicates with Lange Vlei, and is in reality a continuation of it; its maximum depth is 22 feet, water brackish and unfit for use, but near the edge of the lake tolerably good water is found by digging a hole. Wild fowl abounds on them all.

Zwarte Vlei is the largest in this chain of lakes, and most irregular in shape; it extends upwards of 3 miles in one direction, and is connected with Ruigte Vlei, another and smaller lake. They are fed by the Diep, Wolve, Zwarte, and Caratera rivers. The water is brackish, and 48 feet deep in some places. The land at the back of the lakes rises to 700 and 800 feet, and is fertile, but is sparsely occupied by farmers. Though not wooded, there are many conspicuous small clumps scattered about, and it is deeply intersected by the rivers, rendering the roads steep and bad. On the patch of land between the lakes and the sea the various wild bucks of the Colony are found. Oysters and fish may be obtained at the rocks on the beach.

Groene Vlei, irregularly oval-shaped, upwards of 2 miles long, and half a mile at its greatest breadth, contains fresh water. There are no rivers flowing into it, and it has no visible outlet; its greatest depth is 20 feet.

COAST.—From the mouth of Zwarte Vlei, conpicuous bare white sand extends south-eastwards for a mile, when the beach becomes rocky, and continues so for 5 miles, interpersed with patches of sand. The rocks being of a whitish colour are not distinguishable except at a short distance. The beach is backed by irregular hillocks, showing sometimes stony and sandy cliffs scantily covered with green; they are 200 to 300 feet high just south-eastward of Zwarte Vlei, but get lower to the eastward; they, however, increase in height immediately behind, and one mile inland they become upwards of 600 feet high, and then dip into a valley and enclose the last of the remarkable chain of lakes, Groene Vlei.

The land just behind rises abruptly, so that at 3 miles from the sea it is 1,110 feet high. It presents a smooth green appearance, with scattered clumps of trees. The valleys are more or less cultivated.

Several wrecks have occurred on this coast, which is always fronted with heavy detached breakers in bad weather, at a mile or more from the shore.

Goukamma River.—In continuation of the coast to the south-eastward—from 3½ miles to the north-west of Walker point—a clear sandy beach follows for 2 miles in the south-east part of which Goukamma river runs into the sea. These 2 miles present from seaward a broad extent of bare sand-hills and beach. The river is meandering in its course, and remarkable for its sudden rising after rains, and the great depth of water then attained. At a distance of 4 miles by its course from the sea it is crossed by a causeway on the high road between George town and the Knysna; this causeway is sometimes dry, and at others covered to the depth of 12 to 20 feet, with a rushing torrent. The river has an average breadth of 100 yards along these 4 miles of its course; its mouth is closed by sand for long intervals during the dry season.

WALKER POINT.—To the eastward of the Goukamma are two dangerous rocky points, including a small rocky and sandy bay a mile across. Off the westernmost and lowest of the two points, three-quarters of a mile distant, is a rocky patch, on which the sea constantly breaks; but the whole neighbourhood far beyond is foul. Walker point, the easternmost of the two, is also rocky and dangerous, and forms the western horn of Buffalo bay. It extends from a low green hill, which is separated by a space of low sand from the stony and sandy hillocks behind, and therefore appears as an island when seen from east or west.

A chain of rocks extend about three-quarters of a mile from Green hill, but the sea breaks much further out. The land in this locality in the rear is first irregular ridges of sparsely covered hillocks, with ridges of bare sand-hills, in both attaining a heighth of 200 feet. These are backed again by undulating ridges, enclosing flat spaces, but at a distance of 2 miles and upwards inland, the higher green-coloured land is reached, without trees, and rising to upwards of 900 feet.

BUFFALO BAY is included between Walker point and the rocky cliffs westward of the head, at the entrance to Knysna river, the distance is about 3 miles across. It affords shelter to small vessels during N.W. winds, but it should be remembered that the bay has not been sounded, the rocks from Walker point extend to the southward more than a third of a mile.

Anchorage.—Coasters, however, find shelter about midway between Walker point and the bight of the bay, half a mile off shore, in from 5 to 8 fathoms, clear bottom with blue clay; nearer to the point the ground is rocky and unsafe. With the wind anything to the southward of West it is not advisable to remain in this bay, as a heavy breaking sea then sets in.

In case a vessel has to wait for wind or tide, in moderate weather, to enter Knysna river, she may anchor with the flagstaff bearing N.N.E., in 12 to 15 fathoms blue clay, a mile off shore; she will then be in a favourable position to enter with any wind that will suit for crossing the bar. It is not advisable to anchor when the weather is unsettled, as the sea frequently sets in heavily from the S.W., with little or no wind.

KNYSNA HARBOUR (pronounced Nysna), is 17 miles westward of cape Seal, of Plettenberg bay; the entrance of the river is formed between two rocky headlands, and looks like the entrance of a large dock when viewed from seaward. *See* view on plan of harbour. It may be recognised by a mountain terminating in a bluff close to the sea about 10 miles to the eastward of the Knysna, from which bluff cape Seal, a low black point, runs out to the south-east. To the northward of the Knysna there is a remarkable mountain called the Buffalo, eastward of which are five mountains called the Paps, while farther east again are three mountains called from their appearance Peak, Haycock, and Table mountains.* When the harbour is well open, bearing North, a village with two churches will be seen.

Knysna river has two bars, the outer one extending in a convex form to seaward, commencing 40 or 50 yards outside Needles point, on the west side of entrance, and shoaling gradually from 20 feet to 15 feet, on the eastern side close to the rocks. The inner bar extends across the mouth just within Emu rock, on the east side of entrance, and has from 12 to 18 feet water over it, the greater depth being nearer to the Emu, shoaling gradually towards both shores. Both bars are stationary, and are of sand, which is stirred to the surface in rough weather. No difference in the depth of the water on the bars has been observed for several years past.†

The best, indeed only winds for entering are from S.E. and South: these winds blow in through the narrows, and although the breeze may be light at some distance from the shore, it generally freshens as the narrows are approached and blows strongly through. Vessels under sail may get in with the wind at S.W., but it is running a great risk, as they are liable to be becalmed in the narrows. A westerly wind always draws out through the entrance.

Beacons.—There are two beacons to guide vessels over the bar—one on Fountain point, just within the entrance on the east side, consisting of a white stone beacon built upon a large rock, and standing 30 feet above high water mark; the other on Steenbock island, is a small wooden one composed of a long spar with two triangles and painted red; these lie N.E. ¾ N. and S.W. ¾ S., 758 yards apart. The beacon on Fountain point is lat. 34° 4′ 35″ S., long. 23° 3′ 43″ E.

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* J. Olive, master, R.N., 1847.

† *See* Admiralty plan:—Knysna harbour with view, No. 1,224; scale, *m* — 4 inches.

Emu Rock, with 4 feet on it, is on the eastern side of the channel, nearly a cable S.W. of Inner Obelisk point, above which is the signal station. It is just outside the northernmost of the straggling rocky islets which extend from the Mewstone to Inner Obelisk point. The sea does not always break on the Emu rock.

Black Rocks, extending a cable from the western extreme point of entrance, may be passed at a cable's distance. The sea always breaks on them. The South-East rocks are another cluster, distant 4½ cables S.S.E. of the Mewstone.

Directions.—The best time to enter Knysna harbour is with the flood and a little before high water. It is not advisable to go either in or out during the strength of the ebb at spring tides, more especially if there is any break on the bar. Before crossing the bar under sail, it is necessary to have a boat in readiness with a kedge and hawser for immediate use, as the wind sometimes dies away between the heads.

In proceeding in the wind should be at least two points to the southward of West, and not more to the eastward than S.E. If the wind be from the S.W. steer for the Black rocks, keeping them a point open on the port bow, until the beacons are in line bearing N.E. ¾ N. When within Needles point keep half a point more to the eastward (which will still give the Emu a clear berth, and lead in the deepest water on the inner bar), and when near Inner Obelisk point steer towards Fountain point, keeping it just open on the starboard bow and passing at the distance of 20 yards; then steer for Green point (the south point of Best cove), keeping close to it to avoid the tongue of sand which projects from the northern end of Steenbock island, and upon which is a buoy in 11 feet water. The distance of Spit point from Green point is 100 yards only. Having passed Green point, anchor in Best cove in 4 or 5 fathoms. The water is deep close to the shore.

In entering the harbour with a S.E. wind, keep Steenbock island beacon a little open to the eastward of Fountain point beacon, to counteract the effect of the flood tide, which always sets strongly over towards Needles point, and when past that point, steer as before directed.

In leaving the harbour the wind should not be to the westward of North nor to the eastward of E.N.E. The best time to get under way is with the last quarter of the flood, reversing the directions for entering. With a commanding breeze a vessel may go out with the last quarter ebb, but in getting under way care should be taken not to get too close to the eastern shore, as the ebb sets towards the rocks between Fountain and Inner Obelisk points.

It frequently happens that there is no wind in Best cove when there is a fine breeze blowing out through the entrance: this should therefore be ascertained by sending a boat. During the summer months, when the winds prevail from S.E., almost the only opportunity of going out is early in the morning, when there is generally a breeze from the land, which dies away about 9 or 10 o'clock and is succeeded by the sea breeze. Everything should be ready for starting early in the morning, and an officer sent to look at the bar: if he reports it smooth and the breeze blowing out, start without delay should the tide suit, towing into the breeze if necessary, and endeavour to get a good offing before the sea breeze sets in. With light and variable winds the attempt should not be made, as if the wind fails in the narrows it is doubtful whether an anchor would hold, and whether there would be room to swing clear of the rocks.*

The narrowest part of the Narrows, 150 yards wide, is between Inner Obelisk point and the islet opposite.

Tides and Currents.—The tides run from 4 to 5 knots through the Narrows during springs. The flood invariably sets strongly from the eastward towards Needles point, and from thence directly through the Narrows. The ebb from abreast Green point sets directly towards Fountain point, and on to the rocks between that point and Inner Obelisk point, and thence it follows the channel to the eastward, from whence the flood tide enters, except there be a strong westerly current outside, in which case it runs directly to seaward.

With a heavy sea on the bar at neaps there is little or no tide at the entrance; the force of the break drives towards Emu rock large masses of water, which set strongly out again close to the western shore, outside the inner bar. The same commotion is produced on the surface at all states of the tide near high and low water, when the sea is very heavy on the bar, as at the neaps. It is therefore advisable, before taking the bar with a breaking sea, that the flood should have made at least two hours, at which time the stream inwards and the break act together, and the drawback is not felt.†

It is high water, at full and change, at 3h. 30m.; and the rise 6 to 7 feet.

PILOTS.—On the hill over Inner Obelisk point there is a flagstaff, with which communication can be held by signals, and directions given for entering the harbour. There is also a pilot a boat's crew for giving assistance to vessels entering or leaving the port. It frequently happens that, although the weather and bar may be favourable for vessels to enter, it may not be safe or possible for the pilot boat to go out. In this case a signal is provided to indicate the circumstance, and the pilot boat will then be within the bar, with a flag to direct the vessels in and give the necessary directions for the river.

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* Commander Roe, E.I.C., 1830.

† H.M.S. *Peterel*, in September 1867, in leaving the harbour arrived at the outer bar as three heavy rollers came in, one of which caused her heel to touch the ground, but without stoppage. The *Peterel's* draught was about 14 feet.

The pilot signals used are as follows:—

White and blue diagonal.—The pilot boat is coming out.

Red.—Ship is recommended not to attempt to come in.

White and red horizontal.—Ship may come in now. If waiting for the tide, a *red* pendant will be shown over the flag at a proper time for entering.

Yellow.—Pilot boat cannot go out, but a pilot is ready to receive the ship within the bar.

Supplies.—If fresh water in large quantities be required, boats must be sent up the river and casks filled at low water above the point, descending the river when the tide has risen sufficiently to admit of their doing so; but if only moderate supplies of water be needed, there is a spring of good water just above Best cove, which, with a little labour beforehand in cleaning out the dam, may be made to furnish a considerable quantity. There is a constant run of water past the foot of mount Vernon.

The landing place is near the village, the outer end of which is in from 10 to 12 feet at low water springs, which allows vessels to load and unload at all times of tide.

The surrounding country is beautiful and romantic, and abounds in various kinds of game. The Knysna river produces quantities of excellent fish. Live stock and vegetables may be procured from the farmers at moderate prices.

Repairs.—Knysna harbour offers great facilities for ship building and repairs, as well from the close proximity of excellent timber as the favourable state of the harbour for docks and slips, the soil being soft and tenacious and easily worked; and it does not appear that the banks in the harbour have undergone any change in the last 40 years. Formerly there was a naval establishment in the harbour for ship building and several vessels have been built here. Stinkwood is extremely tough and pliable, and is well adapted for the planking of ships' sides, while milkwood is generally taken for knees. Vessels can be hove down and repaired.*

Belvidere.—The Knysna river is navigable for small vessels for a mile above Belvidere, which is 5 miles within the heads, but the channel is narrow and intricate. Belvidere was originally a large farm, but it is now laid out for a village. Vessels of 75 to 100 tons have landed and taken in their cargoes here. Should vessel ground there is little risk of damage, in consequence of the smoothness of the water and the soft nature of the bottom.

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* A proof of the indestructible character of the Knysna wood for piles is seen in the remains of the old Admiralty jetty, the piles of which, both above and below water, being in as sound a state as when they were driven, upwards of 40 years ago.

Westerford.—Westerford farm lies 4 miles above Belvidere, and stands at the edge of the forest, in which there are a few elephants. The river is navigable for boats at high water thus far, where fresh water can always be had in abundance.

The COAST from the entrance of the Knysna trends S.E. by E. ½ E. for 3¼ miles to the mouth of Nütze river. It is composed of irregular red cliffs, 200 to 300 feet high, with patches of shingly beach between jutting points, and fringed with out-lying rocks. Between the Nütze and cape Seal occur frequently, in the foreground, peaked masses of rock, sometimes bare, at others clothed with vegetation, which occasionally rise as high as the cliffs, giving a characteristic appearance to this part of the coast. The fringe of off-lying rocks which rise above the water, lie half a mile from the nearest shore.

The back land between the Knysna and Nütze river rises steeply from the cliffs to a height of 1,000 feet, and wears the usual soft green appearance, clusters of trees become more frequent and larger, and as the latter is approached the land immediately behind becomes thickly wooded. It is throughout intersected with deeply worn watercourses.

Eastward of the Nütze the coast maintains the same precipitous cliffy character (cliffs about 300 feet high), and rising steeply behind to a height of 1,000 feet. For 3 miles inland it is perfectly inaccessible, being completely covered to the cliff heads with dense forest, which extends northward to Plettenberg bay road. At that distance (3 miles along the coast from the Nütze) the forest becomes thinner, and at 4 miles a deep gorge or watercourse is reached, beyond which the country facing the sea assumes the usual smooth green appearance, with scattered clusters of trees. At the mouth of this gorge are two of the largest and most conspicuous of the peak-topped rocks before mentioned, jutting into the sea, and which have the appearance of islands, seen from eastward or westward.

The coast continues of the same character until the Gap between cape Seal and the mainland is reached. The rocky coast has often the regular parallel ridgy appearance so common; often jagged broken masses, and sometimes smooth and flat with rounded points. Throughout the whole of it are numerous off-lying rocks, and there appears no spot where landing could be safely effected.

Nütze River.—The Nütze is a small river flowing across a small patch of sandy beach into the sea, from between high wooded hills; its mouth is often altogether closed. At a distance of 3 miles from its mouth it is called the Witte Els.

CAPE SEAL is the easternmost point of a conspicuous tongue of land, rather more than 1½ miles in length, S.E. ½ E. and N.W. ½ W., rising about its centre to the height of 485 feet. This tongue of land, being joined to the mainland at its western end by a narrow neck, has from many points of view the appearance of a large high island. It has rugged sides, sometimes steeply sloping, in some places with overhanging cliffs, and about its east point fringed with compact flat rock with salient prongs.

It is for the most part clothed with scrubby bush, bare sand and stone cropping out in places. Off its south side is a rocky mass, 123 feet high, almost an island, about half a mile in length, joined to it by a narrow sandy isthmus, which when seen from eastward or westward appears as a smaller island. The sand continues up the sides of the hill over the top, a little westward of the highest part, and seen from seaward is conspicuous as a white sandy perpendicular belt, and serves well, with the low gap on its left, as one of the landmarks of the coast.*

Whale Rock.—S.E. from the pitch of the cape, and 3½ cables from the nearest low-water mark, lies Whale rock, having a depth of 4 feet. There is deep water all round, but the passage between the rock and the cape should never be taken unless from necessity. The sea does not always break on the rock to mark its locality.

PLETTENBERG BAY.—The limits of this bay may be considered to be between cape Seal and the mouth of Salt river, lying E. by N. ½ N. and W. by S. ½ S. from each other, distant about 9 miles. Plettenberg bay, from its deep water generally, its suitable depths at easy distances from the shore, its good anchoring ground, and the shelter afforded, renders it equal to any other bay on the south coast, if not superior to them all.

But like the other bays on this coast, it is exposed to the full force of the south-east gales that blow so violently from September to March; but from the greater depth of water in this bay the sea does not break with such violence as in the others, and if the usual precautions be taken of consulting the barometer and other indications in the weather for a coming south-east gale, a vessel may easily get to sea by making a long board to the eastward, and so weather cape Seal on the opposite tack before it sets in with violence.

There is no regular village here, but the landing place is on a sandy beach near the Government storehouses, and numerous farms are scattered over the country and in the valley of Pisang river, whence supplies of meat and vegetables can always be obtained. Water is difficult to get, unless after recent and copious rains, and has generally to be rafted through the surf in casks. The nearest village is Knysna, which is some 20 miles distant, a journey of some 3 to 4 hours on horseback.*

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* Cape Seal of Plettenberg bay must not be confounded with Seal point near cape St. Francis, 70 miles to the eastward.

Directions.—There are no dangers in entering or leaving the bay, except the Whale rock. The channel between it and cape Seal should not be attempted, as there is generally much swell, and when it blows strong the wind is unsettled and baffling near the cape. By giving the cape a berth of a little more than a mile, vessels may pass safely to the southward, and round the east side of the Whale rock, which is steep-to, having 18 fathoms water, at about a quarter of a mile distance; and when the south end of the long sandy beach is open of the high rocky point on the north side of Seal hill, they will be to the northward of the shoal, and, if the wind permits, may haul close into the bay.

Anchorage.—Though vessels visiting this bay usually anchor under shelter of the ledge of rocks off Pisang river, for the convenience of shipping their timber cargoes, a vessel seeking shelter here in north-west gales should anchor more in the bight or southern portion of the bay, with the extreme low rocks off the cape, S. ⅓ E. to S. by E. ¾ E., and the little white church on the high ground between Pisang and Kourboom rivers, N. by E. ½ E. to N. ⅓ E., in 7 to 10 fathoms, sandy bottom.

A vessel in case of necessity seeking anchorage in a south-east gale may go somewhat deeper into the bight of the bay and find good anchorage, with the Gap bearing S.W. ¾ W., and the low rock of cape Seal S.S.E. ¼ E., in about 7 fathoms, with a clean bottom; but it is not recommended ever to ride out a south-east gale when it is practicable to get to sea.

Tides.—It is high water at Plettenberg bay, full and change, at 3h. 10m., and the rise is 6 feet. There is no regular stream of tide in the bay, but a current generally sets to the southward in the morning between the whale rock and the cape.

Pisang River.—At the junction of the rocky tongue of land forming cape Seal with the mainland, its rocky features ceases, and a clean sandy beach commences and runs north-eastward for 2¼ miles to the mouth of Pisang river. On this beach there is generally a heavy surf, which prevents landing. Pisang river frequently has its mouth closed; it is small, but affords a supply of fresh water; at its mouth is a small rocky mass like an island, 40 feet high, sparsely covered with bush, on the top of which a post is erected with the latitude and longitude carved thereon; viz., latitude 34° 3′ 38″ S., longitude 23° 22′ 53″ E. As this spot is close to the landing place, ships can readily test their chronometers.

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* *See* Admiralty plan:—Plettenberg bay, No. 385; scale, m = 2·4 inches.

Beyond the mouth of Pisang river another sandy beach extends for three-eighths of a mile to a rocky point, forming one side of the mouth of Kourboom river. This is the best beach for landing, though it is even here often impracticable; and off it vessels that usually call here for timber anchor and draw off their small rafts. They are sheltered from the south-eastward by a rocky ledge, extending a quarter of a mile from the shore, which shows in places above water, but is entirely covered at high spring tides. There is plenty of water a cable outside the ledge of rocks, and a safe but narrow channel, with not less than 3 fathoms between it and the rocky mass at the mouth of Pisang river. The old residency, a modern little church and parsonage, with stores and such moderate supplies as the place yields, are close at hand.

Kourboom River is the most considerable on this part of the coast. It rises behind the distant range of mountains visible from the sea, in the Lange Kloof, which reaches 5,294 feet above the sea. It bursts from between high lands 3½ miles from its mouth, and flows across a plain in a tortuous, shallow channel, and obstructed by sand banks, which for the last 2½ miles (or below its junction with the Bitan) is parallel with the coast, and separated from the sea by a narrow sand strip.* It has a bar admitting the entrance of boats only at favourable times. Along its course on the plain it is in many places fordable at low water, but at high water it appears a large river, as much ground covers and uncovers with the tide. In some places between high banks there is as much as 30 feet water, and several such deep holes are found. It is navigable for boats for about 8 miles, where it flows over and through rock and stones.

Bitan River is a small stream, moving sluggishly and winding along a broad plain. It joins the Kourboom about 2 miles from the mouth of the latter, and is fordable just above the junction.

Droog River.—From the mouth of Kourboom river, a clear sandy beach follows for 5 miles, backed by sand hills more or less covered with scant bush, which are at first bare and low, but to the eastward, rise to a height of 140 feet. Behind these sand-hills is a fertile valley, upwards of 2 miles long and three-quarters of a mile broad, flanked by the Kourboom river. Behind this rises wooded high land, intersected with deep ravines. Along this 5 miles of beach no landing should be attempted, as the sea always breaks heavily. At the end of this sandy beach is the mouth of the Droog river, when the coast becomes rocky, having jutting points with intermediate sandy beaches, but the whole fronted by outlying rocks, and the beaches between scattered with them. This river, as its name implies, is mostly without water.

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* Its mouth has evidently shifted to the south-westward, as may be seen by comparison with the Admiralty chart by Lieut. Rice, 1797; but as the stream now impinges on slaty rock, and is turned sharply into the sea, this process has ceased.

Matjies River is one mile eastward of the Droog. Its mouth is often closed. It runs into the sea from between high hills, and is bounded between high precipitous and wooded hills for some distance upwards.

Komkromma or Salt River is upwards of 3 miles eastward of Matjies river; the coast between the rivers consist of rocks and sandy beaches. Midway is the most off-lying cluster of rocks, which are, however, within a quarter of a mile of the shore. Close to the eastward of Matjies river are two remarkable islets, 50 feet high, one resembling a turret, the other a ship; the shore here is dangerous to approach, though, at times, it is possible to land on the rocks. Close behind, the country is park-like, with wooded patches and kloof (gap or chasm), and farther inland, forest.

The entrance of Salt river is said not to be difficult for boats; the river runs between high hills with rocky banks; directly inside it expands into a small lake. It is navigable for boats about a mile from the mouth, and appears to be a convenient place for wooding and watering. Although called Salt river, the water a quarter of a mile from its mouth is perfectly fresh. The timber, which hangs over the stream in places, occasionally obstructing the passage of a boat, extends from the sea many miles inland. The sea frequently breaks heavily off and about its mouth.

General appearance of the COAST.—Over the eastern point of the mouth of Groote river, which is about E. by N. 10¾ miles from cape Seal, is a peak which shows double. The coast thence south-eastward to Aasvogel point, a distance of 37 miles, is nearly straight formed of perpendicular cliffs, and rocky hills, 300 to 600 feet high. It is intersected by rivers and kloofs, with several outlying dangers close to the shore; it should not be approached nearer than a mile. In this extent of coast the numerous small rivers which empty themselves into the sea, take their rise in the Outeniqua range of mountains, but none of them are navigable for vessels.*

The Outeniqua mountains which in this locality back the coast and range parallel to it at a distance of 4 to 8 miles continues eastward to about 7 miles N.E. of Zitzikamma point. This high mountain chain has several well-defined peaks, which from their appearance are very conspicuous and useful landmarks to seamen. Krakeel or Formosa Peak, the highest and most remarkable, is 5,500 feet high, and shows like a thumb with its greatest declivity on the eastern side.

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* The information from Groote river to Bashee river is chiefly by Nav. Lieuts. D. J. May and W. E. Archdeacon, R.N., 1866–68.

Nearer the coast, and only 4 miles from it, the Grenadiers Cap, so named from its shape, is also very conspicuous and 3,224 feet in height. Eastward 20 miles on the same range is Witte Els Berg, a pyramidal peak, 4,098 feet in height; when seen from the eastward, and westward it shows a flat top.

Karedouw peak, when nearly abreast, shows a saddle-shaped hill, but on other bearings a flat top, 3,009 feet in height; it is a most conspicuous peak, and rises about 11 miles westward of the termination of the range. The end of Outeniqua range, to the N.E. of Zitzikamma point is very conspicuous, terminating in a sharp conical hill (1,634 feet in height) which drops suddenly to the plain, extending to the shores of St. Francis bay.

The Elands river range and Van Staden range of mountains, to the N.E. of cape St. Francis are also conspicuous, and in clear weather mount Cockscomb is a splendid object and bears from cape St. Francis N.N.E. easterly about 37½ miles. The Van Staden range, which terminates suddenly, has a remarkable jagged top peak at its south-east extremity called Brak River Hill, nearly 2,000 feet in height. These, with other landmarks, serve to identify this part of the coast.

Groote River.—The entrance to this river, 2 miles eastward of Salt river, appears to be wider than the latter, and inside expands into a lagoon. A conspicuous hillock marks the eastern bank of Groote river, and here the land recedes curving eastward for 2 miles, with high wooded cliffs, as far as Blue Wrantz (Blue Rock) river, which may be known by the cliffs on the eastern side being bare and nearly perpendicular. The coast thence trends in a south-easterly direction for 2 miles to bare cliffs fringed with white rocks at the base. There are deep ravines in the land, and several other rivers along the wooded coast as far as Storm river, but as this portion of the shore was surveyed from seaward, no particular information can be given.

WALL POINT, 12½ miles eastward of Groote river, is so named from its perpendicular appearance, and is formed by a slight projection of the coast. At 4 miles south-eastward of Wall point is the mouth of the Storm river, and between, inland, two conical peaks respectively 3,024 and 3,334 feet above the sea are conspicuous from seaward; the most westerly and lower one bearing North from the mouth of Storm river.

Eastward of Storm river, the Zitzikamma forest loses its denseness. There are no roads westward of Storm river, between it and Plettenburg bay. The coast continues in a S.E. ½ E. direction, showing only patches of bush on its face for a distance of 3 miles, where the dense bush commences, off which, about a quarter of a mile from the shore, there is a sunken rock on which the sea breaks.

Storm River.—The river is about 50 yards in breadth, and flows through a gap between perpendicular cliffs about 600 feet high. Some low shelving rocks on the western side partly shelter the entrance, and under favourable circumstance, landing may be effected in boats a little inside the eastern point, where there is a footpath leading to the forest ranger's house, 2 miles to the eastward. The point forming the eastern entrance is grassy, skirted by several rocks awash lying close to the shore.

Faure River, a small stream, is 5 miles eastward of Storm river. Off Faure river is a long patch of sunken rocks, extending in an E.S.E. and W.N.W. direction, and on which the sea breaks in bad weather; the extremes of the reef bear S.W. ½ W. eight-tenths of a mile, and S. by E. $1\frac{1}{10}$ miles from the west head of the river. At three-quarters of a mile beyond this is a white rock about 40 feet high, in appearance resembling a tent.

Elands River.—The entrance to this river, 8¾ miles S.E. ½ E. from Storm river, is broader than the other rivers in this locality, and may be known by some white rocks a little inside a point on its eastern side of entrance; a mile beyond this there is a conspicuous clump of trees on the apex of a cliff near a kloof. There are many branches to Storm river, and its banks a little inland are covered with dense bush. Eastward of Elands river the cliffs are not so woody.

ROBHOEK or SEAL CORNER POINT lies 2¼ miles eastward of Elands river, and may be known by the land receding on each side, with a grassy face, sloping gradually to a rocky peak near the sea, and also from its lying S. by W. ½ W. of Whitte Els Berg mountain. One mile eastward of Robhoek point, the cliffs are nearly perpendicular with bare rocks cropping out of the bush, to a sandy cove, off which there are several rocks, awash at the distance of a cable from the shore. At 2¾ miles farther on is the mouth of the little river Witte Els; thence sand skirted by rocks, extends along shore 1½ miles to a high conspicuous white rock, with a ledge extending nearly one mile in a north-westerly direction; the ledge covers at half tide. Continuing eastward to Aasvogel point there are several outlying dangers awash lying a quarter of a mile from the shore. The summits of the cliffs are nearly level with the exception of a green hillock, which is nearly midway along this part of the coast. There are several farm houses a mile inland.

AASVOGEL or VULTURE POINT may be known by the cliffs forming a hill, 660 feet high, with a strip of sand at the back of it half a mile inland. As the land behind is lower, the hill appears, on certain bearings from the westward, as an island. A rock awash, lies a cable distant from the point; with this exception the point appears bold. The saddle peak of Karedouw, on the Outeniqua range, bears nearly

N.E. by N. 7½ miles from the bluff of Aasvogel point. At 2½ miles westward of Karedouw peak is a road through the mountain range, and at the same distance, to the south-eastward, is the village of Clarkson with a population of 500, and the Moravian mission.

From Aasvogel point the land forms a bight to a small stream 4 miles farther on; the coast between is composed of cliffs, and appears clear of outlying dangers. Nearly midway there is a conspicuous grassy peak 346 feet high. At this stream near the coast the land is more elevated, rocks lie about half a mile from the shore, and there are sandy beaches as far as the mouth of Zitzikamma river. From a position 2 miles eastward of Aasvogel point to Klippen point, the shore should not be approached nearer than 2 miles.

ZITZIKAMMA RIVER, the entrance of which is closed, is easily identified by some sand cliffs nearly a mile in extent on its western side, the left end of which from the westward has the appearance of the letter Y. At the back of the sand cliffs the land rises to an elevation of 729 feet. When the river bears E.N.E. or when the east extreme of the Outeniqua range of mountains is just open to the left, higher sand patches appear on the face of this hill, a little distance up the river. The eastern side of the river is much lower than the western side, and there is a conspicuous round hill, 379 feet high, half a mile up the river, facing the entrance.

Close to the mouth of Zitzikamma river on the eastern side is a rock about 50 feet high with a cavern in it, locally known as the House rock. At the back of this rock there is another sand patch, visible from the westward when close in shore. Thence to Zitzikamma point, a distance of 2¼ miles, the coast is formed by the termination of several grassy ridges, forming bights, and fringed with rocks. A mile eastward of House rock, there are several high, needle-shaped rocks, but towards the point they are low and shelving. There are many streams of fresh water in this locality.

Zitzikamma Point is low and shelving, with many outlying rocks, and breakers, extending nearly three-quarters of a mile from the shore. A little distance inland there is a round hill, forming the end of a range. Eastward of the point the coast trends more to the southward and is composed of a succession of bushy hillocks 50 to 120 feet high; from the base of the hillocks shelving rocks and breakers extend off about half a mile. At the back of these hillocks to a distance of 2½ miles, there are several ridges with grassy vales between them parallel to the coast, as far as Slang river. The highest of the hills in the vicinity of the point is 596 feet, 2¼ miles eastward.

To the eastward of Zitzikamma point, 1¼ miles, there are inside the rocks two sandy coves from which the sand is blown by strong westerly winds nearly a mile to the eastward. A mile beyond the coves, a sandy beach is formed inside the low water rocks.

A dangerous reef, awash at low water, lies upwards of half a mile from the westernmost of two conspicuous triangular bushy hillocks, with sand between them. At the base of the western, there are several high rocks, and the coast curves to the southward two-thirds of a mile to Wreck point, so called from the *Runnymede* having been wrecked at that spot; two rocks awash lie close to this point.

Just inside Wreck point, there is a sand patch visible from seaward, and a conspicuous peak 560 feet high, on the ridge a mile inland. About half a mile to the eastward of the point there is a long ledge of rocks, the eastern part awash at low water, projecting from the coast, and forming a cove which is sheltered and where at times landing can be effected. On the coast facing the extreme of this ledge, the top of one of the grassy hillocks is covered with sand. Within the cove at low water, there are long shelving rocks and big boulders, and on the western part there is a little sandy beach. Between this and the point, there are several other rocky indentations, and the coast is fronted with rocks, behind which there is a grassy ridge about 100 feet high.

REEF or KLIPPEN POINT, is a long, low, rocky point, and from it a cluster of rocks projects two-thirds of a mile, in a S.S.E. direction; the outer rock is nearly awash at low water, and the inner one 13 feet above high water. Klippen point is 30 feet high, and has a grassy hill 68 feet high, a little to the northward of it. The point should not be approached within 1¼ miles. The land eastward of the point curves round and forms Slang bay.

SLANG BAY has on its western side low sand cliffs, 30 to 50 feet high, with patches of bush, and sunken rocks appear to extend from Klippen point reef to a ledge of rocks on the beach half a mile N.E. of Klippen point. In other parts the bay appears free from rocks, except a small patch on the beach, near the mouth of Slang river. At the termination of the bushy hillocks are two conspicuous sand patches. Bare sand hills then continue inside high water mark, round the bay for 3 miles, whence it is blown by the strong westerly winds experienced along this coast, between two ridges to a distance of 6 miles inland.

The above extent of sand is about half a mile in breadth, but as the western end is elevated, forming hills, 300 feet high, the whole of it is not seen from seaward; this part is very conspicuous from the westward, and at the base of these hills there are several pools of fresh water formed between clumps of rocks cropping through the sand. A heavy surf rolls into Slang bay.

Slang river is at the head of Slang bay, E. by N. 1½ miles from Klippen point, but its mouth is closed. The bare sand on its western side, extending a little distance inland, is conspicuous from seaward, also a sharp, bushy hillock, on the eastern side, 98 feet high, the highest and extreme of a ridge facing the beach, also serves to identify the locality of the river.

At the extreme of the beach already described, 2½ miles from Klippen point, the coast trends S.E. by S. for 3 miles, and consists of wooded hills, 200 to 250 feet high, based by low, rocky cliffs, 10 to 20 feet high. At 1¼ miles from the sand is White point, 30 feet high, so named from the whitish colour of the rocks; it forms the western point of a sandy cove, which may be recognised by a stream of water and a conspicuous sand patch.

Another small stream discharges itself into Slang bay three-quarters of a mile to the eastward of Slang river, and at the back of this, the land gradually rises to a grassy ridge 596 feet high; at 3 miles inland some white farmhouses, 2½ miles east of the ridge, are conspicuous from the westward. There is another cove three-quarters of a mile beyond White point, and near Thys point; the cove is formed by a rocky ledge, a third of a mile in length, parallel to the coast, and is nearly filled with large boulders, which cover at high water, when, under favourable circumstances, a boat may land and fresh water be obtained.

THYS POINT lies S.E. by E. 5¼ miles from Klippen point, and forms the western point of Thys bay. It is 50 feet high, with low, shelving, and sunken rocks, extending from it a third of a mile in a south-easterly direction. Thys bay is a sandy bight about a mile in breadth, apparently free from rocks; low sand hillocks fringe the bay, and at the eastern end there is a sand hill partially topped with bush, 366 feet high; here the sand is blown inland to a distance of 2 miles, forming a conspicuous stripe when seen from seaward. At the back of the sand hill just described there is a pool of fresh water.

The shore from Thys bay trends in a south-east direction, and is rocky and rugged, with grassy cliffs from 50 to 110 feet high. From Slang bay to cape St. Francis there are numerous ridges of wooded hills extending in an east and west direction across to Krom bay, with grassy vales between; the highest hill is 419 feet high.

Scholtz Kraal is a cliffy cove, lying 2⅛ miles from Thys bay; in it there are several rocks, and at the head a small waterfall. In the back ground near the summit of the ridge, about half a mile from the coast, there is a farmhouse, remarkable as being the only homestead between Slang bay and cape St. Francis; the house may be seen from seaward. In the vicinity of Scholtz Kraal, rocks awash, lying a quarter of a mile from the shore, fringe the coast for a distance of 1½ miles, and in a rocky bight, 1¼ miles to the south-east of the Kraal, H.M.S. *Osprey* was wrecked in 1867. At this bight the grassy cliffs and hills decrease in elevation, the shore is straight, and fronted with rugged rocks, 10 to 30 feet high.

SEAL POINT lies 2 miles W. by S. from cape St. Francis, and from seaward shows as a tongue with a rocky projection; on the point there is a conspicuous rock showing like a hut; seaward of the point there are three rocks nearly awash. Half a mile S.E. by E. from Seal point there is a reef half a mile in extent, on which the sea breaks heavily in bad weather.

Between Seal point and cape St. Francis, the coast recedes and forms a bay about half a mile deep; its shores are rocky, with large boulders, but at its head there is a low sand beach, in front of a ridge of bushy sand hillocks varying from 30 to 70 feet in height.*

CAPE ST. FRANCIS LIGHT.—At about 250 yards within the extreme of Seal point is a light tower, 102 feet high from base to vane, cylindrical in shape, built of stone, and painted white, with keeper's dwelling attached. The tower exhibits a *revolving* white light, flashing at intervals of *twenty seconds*, at an elevation of 118 feet above high water, and should be visible in clear weather from the bearing of S. 83° W. (northward of which line of bearing it is obscured by cape St. Francis) through all points seaward, from a distance of about 16 miles. The light is named cape St. Francis light. *See* page 84 on the distinction between cape St. Francis and cape Recife lighthouses.

CAPE ST. FRANCIS is the most prominent point along this coast, and its position may be known by mount Cockscomb, which bears N.N.E. easterly from it, and by the extensive plain inshore on which at a distance of 10 miles from the cape may be seen the village of Humansdorp. *See* description of mountains, page 71. At the back of this village are two remarkable mountains, the nearest one, Kruisfontein, has a double peak, the other has a single peak called from its appearance Sharp peak; from the eastward and westward cape St. Francis appears as two bushy hummocks with a bare sand ridge between; the northern hummock is 140 feet high, and the southern 110 feet high. On the western side of the cape sand is of great extent, but on the eastern side, in the bight of Krom bay, 2 miles to the north-west there are conspicuous high sand hills.

On a near approach a lower hummock will be seen terminating in a long rocky point, with boulders about a quarter of a mile in extent; the highest part of this point is near its eastern edge and is 25 feet in height. This side apppears clear of outlying dangers, but on the opposite side, at high water, the sea overflows the boulders and forms bights between the rocky points; here also there are several rocks awash. Immediately off the cape are two rocks 11 feet and 9 feet above high water, with low water rocks between, terminating in a reef extending about 2 cables beyond. The outer extreme of this reef lies S.S.E. ½ E. 1¼ miles from the highest hummock, where they both appear nearly in line.

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* *See* Admiralty chart:—Cape St. Francis to Waterloo bay, No. 2,085; scale, *m* = 0·3 inches.

Vessels from the westward, rounding cape St. Francis, should give Seal point a berth of 2 miles, and not bring it to bear westward of N.W. by W. ½ W. until the high sand hill in Krom bay, already described, (or the western end of beach) is well open eastward of the point. In a near approach from the southward cape St. Francis will be known in daytime by the lighthouse on Seal point; the cape should be approached with caution at night, as the soundings near it are very irregular.

KROM BAY is formed between cape St. Francis and Zeekoe point (Sea cow); it is 7 miles in breadth and 2 miles deep. As but few soundings have been obtained in this bay only a general idea of the depths can be given; the best anchorage is said to be in 10 fathoms over a sandy bottom, with cape St. Francis bearing S.W. ½ W. distant about 2 miles, and about the same distance off the mouth of Krom river. Krom bay affords good shelter in westerly gales, but it cannot be considered safe with easterly winds. South-west winds are the worst for swell. There is generally a heavy surf along the beach, but with westerly winds landing may be effected at the western end of the beach, or on the rocks forming that extreme of the bay. There are several farmhouses, in the neighbourhood of Krom bay, whence supplies may be had.

From cape St. Francis the coast trends N.N.W. 2½ miles, forming the western side of Krom bay; for 1½ miles the coast is rocky, irregular, and backed by grassy hills partially covered with bush. There are two rocks, 4 feet above high water, about 100 yards from the shore, with a small ledge extending from them; with these exceptions the coast is clear of outlying dangers. Then commences the sand hills, 200 feet in height, already mentioned, the base of which is fringed with rocks and boulders for about three-quarters of a mile to the beginning of the sandy beach; at this point at low water there is a long ledge of boulders, near which is considered one of the best places for landing.

The coast between the boulders just mentioned and Zeekoe point, in extent about 7 miles E.N.E., is formed by bushy sand hillocks, and fronted with a sandy beach, which to the westward of Krom river, at low water, is flat and free from rocks. Between the coast hills and high water line the sand is blown into ridges, which in many places nearly reach the summit of the bushy coast range. The highest hillock between this point and Krom river is 67 feet, and just behind it there are some ruins of a fishing establishment, and a spring of fresh water.

Tides.—It is high water, full and change, in Krom bay at 3h. 34m.; springs rise about 6 feet. South-east winds neap the tides in Krom bay, and north-west winds cause a corresponding rise. The barometer falls before north-west winds, and rises on the approach of south-east winds.

Krom or Crooked River, one of the longest rivers on this part of the coast, is 100 miles in length, but like the others not navigable. At low water there is one foot on the bar, and the river's mouth is contracted to a breadth of about 33 yards, but at high water, the sand being very flat, the river presents an entrance, about 2 cables in width; within the entrance the water is deeper. There is a ford about 2 miles from the mouth, and near it are several farm houses where supplies may be obtained.

Humansdorp.—The village of Humansdorp stands north, 7½ miles from the mouth of Krom river, on the main road between Cape town and port Elizabeth, and contains a population of about 2,000; it gives its name to the district, has postal communication with all parts of the colony, and is 56 miles from port Elizabeth, with which and Cape town it is connected by electric telegraph. It is conspicuous from sea.

Zeekoe River.—The entrance to this river is E. by N. ½ N. 4½ miles from Krom river, and is broad but generally closed. At three-quarters of a mile from its mouth the river divides into two branches, the western taking its rise near Humansdorp. The water is fresh at about 2 miles from the sea. The hillocks fringing the intervening coast are higher than on the western side of Krom river, and there are numerous rocky ledges projecting from the sandy beach, all of which nearly cover at high water. For nearly a mile west of the river the beach is clear of rocks, and bare sand ridges face the coast range. Behind it there is a grassy plain with several isolated wooded hills running parallel to the coast range, and elevated 114 feet above the sea; the highest sand hillock is nearly midway. About half a mile beyond this there is a gap in the wooded sand kops, through which the road passes to one of the farms in the neighbourhood.

ZEEKOE or SEA COW POINT, 102 feet in height, lies eastward half a mile from Zeekoe river, and is formed by the bushy sand cliffs receding, which give it a conspicuous appearance. At Zeekoe point the coast trends to the north-eastward and continues of the same character; at 1⅓ miles beyond the point is a sandy bight, between two projecting ledges, where there is a fishing establishment, and the place is called Jeffrys bight, after the person who settled it. Here is a large two-storied white building with a slated roof, also some cottages. There are two whale boats stationed at the cove, and in fine weather it is considered one of the best landing places.

NOORS KLOOF POINT lies 1⅓ miles to the north-east of Jeffrys bight, and is formed by a wooded hillock near the termination of a back ridge of hills. Thence the coast curves in about a mile, and the beach is comparatively free from rocks.

Kabeljou river lies N.E. by N. 1¾ miles from Noors Kloof point; immediately to the westward of it the sand hillocks are low, and nearly bare; it is a very small stream, and closed at its mouth. The frontier road crosses the river about a mile from its mouth, and at this place fresh water may be obtained. Continuing eastward, the coast takes a slight curve, and then extends E. ½ S. nearly straight. At 2 miles eastward of Kabeljou river, the bare sand, in many places, overtops the coast hillocks, which range from 50 to 80 feet in height. The backland, for 3 miles inland, forms a flat, and nearly midway to Gamtoos river there are some conspicuous farm buildings a mile from the beach.

Gamtoos River.—The entrance to this river, 5½ miles from Kabeljou river, bears about E. ½ N. 6⅓ miles from Noors kloof point, and is at the head of St. Francis bay. It is nearly closed at its mouth, but has deep water inside, with an ebb and flow 8 miles from the sea; a ferry from the main road crosses it 3 miles from its entrance, by means of a punt. The right point of the river is formed by bare sand hills, and the land is low, but on the opposite side the hills form bluffs, which are conspicuous from the sea.

A little to the eastward of Gamtoos river there is a ridge of bushy cliffs, with sand showing in the back ground, giving it the appearance of a point; here the bare sand hills increase considerably in elevation, forming ridges, nearly perpendicular to the coast, and meeting the high wooded coast range, in some places nearly a mile from the low-water line. At the back the land is high and rugged, attaining an elevation of 900 feet, at a distance of 3 miles.

A bare sand hill with a square tip 320 feet high, 7¼ miles E.S.E. of Gamtoos river, is very remarkable, and readily identified by its having some bush on its face, about halfway down its slope. There is some cultivated land a little distance inland of it.

Van Stadens River, also closed at its mouth, is S.E. by E. ¼ E., distant 9¼ miles from Gamtoos river, and may be known by the high sand hills which form a saddle sand peak on its western side.

The coast between Van Stadens river and Maitland river, is formed by bushy sand hills, and beach overtopped by a grassy ridge, with patches of cultivation 694 feet above the sea. The abrupt termination of the Van Staden range of hills, and a double peak nearly 2,000 feet high, 5 miles inland of these two rivers, are also good marks for identifying this locality.

Maitland River may be easily identified by the sand extending some distance inland at its western side, forming a conspicuous round hill, and by another high sand patch, about 1½ miles eastward of it. Its mouth is S.E., a little more than 3 miles from Van Stadens river, and like all the other rivers it is dry at its mouth. There are several farms along the banks of the river, and lead has been found in a mine about 2 miles from its mouth.

The coast from Maitland river trends S.E. by S.; the eastern point of the river appears bold from seaward, and is the termination of a grassy ridge; it is fringed at its base with low water rocks, and a sandy beach. A mile beyond are several bare sand hills one mile in extent and conspicuous from seaward.

The coast thence follows the same direction, with a ridge of grassy hills, studded with trees, and fronted with shelving rocks, and occasional patches of sand, to a point lying S.E. by S. $4\frac{1}{10}$ miles, off which there is a peaked rock, and several hidden dangers, extending about a quarter of a mile from the shore. Here the land slightly curves, and forms a bight nearly 2 miles in length, into which run several streams of fresh water. Shelving rocks and sunken dangers skirt the coast; in the bight there is a conspicuous wooded peak, 220 feet in height, at the base of which sand commences and extends half a mile inland, forming several hillocks.

At the eastern end of the bight just mentioned, and near the extreme of the sand, there is a point with several high water black rocks lying close to it. Half a mile to the eastward of these rocks is a conical wooded peak 172 feet high, and farther on is Glassen point.

GLASSEN POINT is broad with rocky ledges, and many hidden dangers, extending half a mile from the shore, on which the sea breaks with fearful violence during heavy gales. The cliffs are formed by the termination of bushy hills about 150 feet in height. One and a half miles inland there are two hills, the western one wooded; and the top of the eastern one bare, with a conspicuous clump of trees near its western slope, its summit being 690 feet above the sea.

COAST.—At 4 miles to the eastward of the hills just mentioned, is another wooded ridge, near the eastern extremity of which is a peak called Buffels Fontein or Botha Kop, elevated 915 feet above the sea; it has a bluff termination, and near it are several buildings.

At a mile E.S.E. of Glassen point, the cliffs form another wooded peak 172 feet above the sea; there are several patches of sand between this peak and the first ridge inland, and a little to the westward of it, in a ravine, are several pools of fresh water. The beach is sand, and a rocky ledge extends from it in a southerly direction, about a quarter of a mile. The coast then takes a slight curve and forms a sandy bay 2 miles in length, backed by wooded hillocks. In the western part of this bay there are several ledges of rocks, but in the bight, where there is a conspicuous triangular patch of sand, about 60 feet in height, on the cliff face it is clear. One mile farther eastward a belt of sand about 2 miles wide extends in an easterly direction for 6 miles, to near cape Recife, which is very conspicuous.

Following the sandy bay is another rocky ledge, running parallel to the coast, and near it a point, which bears S.E. by E. 3¾ miles from the above wooded peak (172 feet high). The land then takes a slight curve for 1½ miles, with wooded hills backed by bare sand; the shore is skirted with a rocky ledge.

At the extremity of this curve there is a double peaked wooded hill, 200 feet high, with a grassy base, and several streams of fresh water run from the cliffs. Here the land assumes a different aspect, and continues to the south-east with a grassy flat in front of the wooded hills, to a distance of 2 miles to a rocky point, off which there is a high water rock and breakers, extending about a quarter of a mile from the shore. This point bears S.E. ½ E. 7 miles from the eastern part of Glassen point, and over it there are two round hillocks in front of the low wooded hills.

At this point the low wooded bills recede, and there is a grassy flat, with stunded bush nearly three quarters of a mile between it and the coast, which is fronted with rocks and hidden dangers lying about a quarter of a mile from the shore; at 1½ miles eastward there are three buildings close to the sea.

Chelsea Point lies about S.E. by E. ½ E. 2½ miles nearly from the last point; the point is shelving with several conspicuous grassy hillocks over it, the highest 103 feet above the sea. At the back there are some high sand hills, and off it there are two rocks uncovered at high-water and a number of hidden dangers. From the outer extreme of these dangers, the highest hillock, half a mile eastward of the point, bears North, distant two-thirds of a mile; the ledge forming Chelsea point N.W. ½ N. a mile nearly; and cape Recife lighthouse E. ⅓ S. 3$\frac{4}{10}$ miles. From Chelsea point the land recedes and forms a bay nearly a mile deep, which trends round to cape Recife; the shore is fringed with rocks and hidden dangers. Bare sand hills extends all along the coast with occasional clumps of bush.

There is a strong indraft here, and ships should not approach the point within a distance of 3 miles. It is also said that an indraft exists between cape Recife and Glassen point.

GENERAL DIRECTIONS.—From cape Seal to Zitsikamma point the shore should not be approached within a distance of 2 miles, or at night and in thick weather a vessel should not stand into less than 45 fathoms. Thence to cape St. Francis the same distance should be preserved in daytime, but at night and in thick weather, owing to the irregularity of the soundings and the probability of the current setting directly on to the shore, it should not be approached in less soundings than 70 fathoms. Being well eastward of cape St. Francis and thence to cape Recife the same distance must be observed in daytime, and at night until the vicinity of Glassen point is approached, the vessel may go into 45 fathoms, but in thick weather and at night no nearer to cape Recife than into 60 fathoms.

CURRENTS.—Caution.—A current at times sets directly on to all this part of the coast or in a north-east direction; seamen should therefore avoid hugging the land at night or in bad weather, when bound either east or west; more especially as dense fogs occasionally prevail. From cape Agulhas eastward to Buffalo river the current has been known not only to set to the westward along, but towards the coast, more particularly opposite bays and indentations.

A weak current runs to the eastward near the shore all along the coast between cape Seal and cape Recife, but in the offing as a rule the Agulhas current sets to the westward at a rate of from one to 2 miles an hour; and off the edge of the bank of soundings at a greater velocity, namely, as much as 3½ or 4 miles. In westerly gales smoother water is experienced when on the bank than when off it.

CHAPTER IV.

CAPE RECIFE TO CAPE CORRIENTES.

VARIATION IN 1878 :—

Cape Recife	30° 10′ W.	Natal	26° 30′ W.
Buffalo river	29° 20′ W.	Cape St. Lucia	25° 20′ W.
St. Johns river	28° 25′ W.	Delagoa Bay	23° 50′ W.

CAPE RECIFE, the western extreme of Algoa bay, projects to the south-east and terminates in a low point about 9¼ miles S.E. ¼ E. from Buffels Fontein or Botha Kop, page 81. On the cape is a stone lighthouse, 80 feet high from base to vane, and to the north-west of it is the hillock of Recife, which is the higher of the two.* In making the cape from the westward, the hillock, being higher than the lighthouse, is often plainly seen some time before the latter is made out.

In approaching the land from the southward during daylight, cape St. Francis has been mistaken for cape Recife, but they may be distinguished by the hummock above mentioned, which appears at a distance as the termination of the coast line, and by a remarkable strip of bare white sand of considerable extent, immediately to the westward of the hummock, extending horizontally, and showing as a beach : also from the fact that cape St. Francis lighthouse is coloured white, while that of cape Recife is painted in red and white horizontal bands. The light at cape St. Francis is a *revolving* white light every 20 seconds ; the light at cape Recife is a *revolving* white light every minute.

The position of cape Recife may also be known by the bearing of mount Cockscomb, which rises N.N.W. ½ W. 52½ miles from it ; and by Brak River Hill, at the south-east extremity of the Van Staden range, *see* page 72.

Beacons.—A stone beacon, painted in red and white bands, 25 feet high, stands at about 500 yards N.N.E. of the lighthouse as a mark for the Dispatch rock. Two stone beacons have also been erected about a quarter of a mile northward of cape Recife near Beacon point, E. ¼ N. and W. ¼ S., 1,200 yards from each other. They are each 25 feet high, surmounted by a ball, and painted in alternate bands of red and white.*

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* *See* Plan:—Algoa bay, including Bird islands and view, No. 642 ; scale, *m* = 1·0 inches.

LIGHTS—The lighthouse on cape Recife exhibits, at 93 feet above the sea, a white light, *revolving* every *minute*, and visible from seaward in clear weather from a distance of about 15 miles, between the bearings of East and South. Also, a ray of *red* light is shown from the same lighthouse over the Dispatch or Roman rock, which, in approaching the anchorage in Algoa bay, will be seen between the bearings of S. by W. and S.W. ½ S. The tower is 80 feet high and painted in red and white horizontal bands alternately.

At Port Elizabeth, on a hill at the back of the town, S. ½ E. 25 yards from Donkin monument, is a lighthouse which exhibits at 225 feet above the sea, a *fixed* white light, which should be seen from a distance of 12 miles. The light is visible from seaward between the bearings of N.W. and S.W.: through one point of the compass at each extremity of the arc, viz., from N.W. to N.W. by W., and from S.W. to S.W. by W., the light is *red*, and the intermediate 6 points white. The tower is stone colour, and 55 feet high.

Caution.—As it is possible that in consequence of its greater elevation, port Elizabeth light may be seen in some conditions of the atmosphere by vessels coming from the eastward before the light on cape Recife, care should be taken not to bring it to bear southward of West until the revolving light on cape Recife be clearly discerned.

Telegraphic communication exists between cape Recife lighthouse and port Elizabeth, and thence to Cape town. Vessels can be reported, if necessary.

ALGOA BAY is formed between cape Recife at its western, and Woody cape at its eastern extremity, which are 33 miles apart, and bear nearly east and west of each other. In the south-west corner of the bay is the town and port of Elizabeth, the latter a safe and convenient roadstead at all times of the year, where provisions may be obtained and every necessary for the repair and supply of disabled vessels.

The town of port Elizabeth is named after Lady Elizabeth Donkin, to whose memory an obelisk, 210 feet high, is erected on a hill overlooking the town and sea; her husband, Sir Rufane Shaw Donkin, arrived here in April 1820, for the purpose of locating the British settlers. Then there were but a few huts, now the town contains a population of about 18,000, and is fast increasing in size and importance. It is the principal seaport of the eastern province of the Cape colony, and from its geographical position with reference to the other states, and as a port of call or refuge for vessels from India or China, renders it a place of much importance.

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* The information about Algoa bay is mainly by Dayman and Simpson.

The principal buildings are the town hall, library, provincial hospital, the Grey Institute, London and South African and Standard banks, St. Patrick's, Oddfellows, and Good Templars halls, Masonic temple, the wool and produce market, gasworks, custom house, and other handsome buildings, together with 16 churches and places of worship within the town and environs. There are also two parks, one named St. George, the other Prince Alfred. The exports consist of wool, hides, ivory, beeswax, sheep and goat skins, ostrich feathers, tallow, Angora hair, &c.

In the year 1875, 360 vessels, amounting to 264,467 tons, entered inwards, foreign and coastwise; and 353 vessels, amounting to 261,334 tons, cleared outwards, foreign and coastwise. In the same year the value of the imports was 2,681,333*l.*, and that of the exports 2,832,523*l.*

The outlying dangers are the Thunderbolt reef, Riy bank, Dispatch or Roman rock, and Strutt reef. In the north-west part of the bay are the Jahleel and St. Croix islets, and the Brenton rock.

Thunderbolt Reef.—This dangerous detached reef lies about three-quarters of a mile from the pitch of cape Recife, with the lighthouse bearing about N.E. ½ E., and the sea very generally breaks heavily upon the jagged rocks of which it is composed, which are often plainly seen; but at high water and in fine weather this may not occur. There is a decided indraught towards this reef and the extreme of the cape, and no sailing vessel should attempt to approach either, except with a commanding breeze, within the distance of 2 or 2½ miles. The reef received its name from H.M.S. *Thunderbolt*, which vessel, in 1846, struck upon its north-east edge in attempting to go between it and the cape in fine clear weather, and with difficulty reached the beach of port Elizabeth, where she became a wreck.

The soundings about the cape and reef decrease very suddenly from 10 fathoms, and if there be any doubt as to the exact distance off shore, a vessel should slacken speed, so as to obtain accurate soundings in rounding the cape, and not go into less than 12 fathoms, by night or day. On the western side of the reef there is no bottom with 14 fathoms, at about a quarter of a mile from it.

Dispatch or Roman Rock.—The least water found on this dangerous rock is 8 feet. It is steep on its eastern side, but should not be approached within 2 cables on its west and north-west sides. From the shoalest part, cape Recife red and white beacon is in line with the centre of the lighthouse, bearing S.S.W.; and the two beacons on Beacon point are in line bearing about W. ½ S.

Riy Bank.—The shoalest part of this bank lies about E. by S. ¼ S. distant 8½ miles from cape Recife lighthouse. It is named after its first discoverer, the master of a merchant vessel, who reported having seen breakers here in 1812, but its existence was disbelieved until the survey of the bay in 1855. Although not exactly a danger impeding the safe navigation of the bay, the bank is about a mile in extent, composed of uneven rocky ground, with soundings of from 6 to 14 fathoms, and the sea breaks heavily over it after S.W. gales.*

Strutt Reef, a rocky shoal with 15 feet water at low springs, cover an area of about 50 square yards, and lies to the southward of the southernmost part of the anchorage, and 3 cables from the shore, with the following marks and bearings:—Waterpipe and Reservoir house in line with the two southernmost houses of the town, W. ½ N. 3½ cables ; Scotch church spire in line with the square tower of St. Marys church, N.W. ; Bird rock, S.S.E. ; and port Elizabeth lighthouse, N.W. ½ W.

To clear the reef do not shut in the tower of the mosque—which is red—with the north end of the breakwater, nor open the tower of the Grey Institute to the south-westward of Elizabeth lighthouse, in approaching or leaving the anchorage, which will clear the reef, in not less than 25 feet water at low springs.†

Directions. — Coming from the westward and having rounded cape Recife at the distance of about 2 miles, steer N. by E. or more northerly, taking care to keep the red and white beacon on cape Recife well open west of the lighthouse, until the two beacons near Beacon point are in line, or Beacon point bears W. by N., to avoid the Dispatch or Roman rock, when a vessel may steer for the anchorage.

There is seldom any advantage in passing between the Dispatch or Roman rock and the mainland, and no large vessel should attempt it ; but in a small vessel and by those acquainted with the locality—in fine weather or in cases of necessity—should the route be chosen, proceed as follows :—with cape Recife lighthouse bearing N.W. distant about 2 miles, steer North for 3 miles, or until the lighthouse bears S.W. ½ S. and in not less than 10 fathoms water. Then steer about N.N.W. ½ W. and bring the beacon on cape Recife well open east of the lighthouse, and by keeping it so and not going into less than 6 fathoms water on either side, a vessel will pass westward of the Dispatch rock, and when the line of the two beacons near Beacon point is passed, may steer for the anchorage.

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* A rock, said to have been discovered by Captain Hunn, of H.M.S. *Redwing*, in 1819 (although minutely described as having in one place only 4 feet water on it, and being 1¾ miles from shore, with Bird rock bearing South, Fort Frederick W. ½ S., and the northernmost of the St. Croix islands N.E. by E. ½ E.), has been carefully searched for without success by Messrs. Dayman and Simpson, whose valuable survey of Algoa bay was published in 1855. It is to be inferred that this supposed rock does not exist.

† *See* Admiralty plan:—Port Elizabeth, No. 641 ; scale, *m* = 4·0 inches.

Beacon point, which is low and sandy, terminates in rugged rocks, and should not be approached nearer than half a mile.

Caution.—A strong indraught will often be felt after passing cape Recife and the Thunderbolt reef, and allowance must be made for it in shaping a course either inside or outside the Dispatch rock, particularly for the former, as foul ground stretches out a long way from the shore, between the beacon on the cape and Beacon point; and it has often occurred that sailing vessels by not allowing for indraught have got on shore.

At night.—As the light on cape Recife is not visible to vessels coming from the westward, when bearing southward of East, it is necessary in making the light, before arriving within the distance of 5 miles of it, that it should be brought to bear *northward* of East. If from unavoidable circumstances, when within the above distance of the cape, and the light not visible, vessels should steer to the southward until the light is seen. In approaching the cape round it slowly at the distance of 2 miles, and in not less than 15 fathoms water, bearing in mind the strong set towards the cape and Thunderbolt reef, and when the light bears N.W. steer N. by E. for 3 miles, taking care not to enter the ray of *red* light shown from cape Recife lighthouse; when port Elizabeth light is seen, which will first appear *red*, and bear N.W., a vessel will be clear of the Dispatch rock, but should continue on across the red into the white light, which will bear N.W. by W., and then to the anchorage.

In working in, or coming from the eastward, a vessel should keep in the white light of port Elizabeth.

Anchorage.—An inner anchorage off the town of port Elizabeth, in about 6 fathoms water, grey sand over clay, may be taken with the south-east angle of fort Frederick bearing W. ¼ N., and the Bird rock at Beacon point S. ¾ E. An outer anchorage equally good for large vessels is in 8 fathoms, similar bottom, with the above objects bearing respectively W. ¼ S. and S. by W. The port captain determines the berths for merchant vessels, and ships of war need only take the precaution in the summer season, when East or S.E. gales may be expected, to anchor with plenty of room to veer. The holding ground is good, and with the ordinary ground tackle of ships of war, there is no danger in riding out these gales. At night bring port Elizabeth light to bear about W. ½ N., and anchor in 8 fathoms.

H.M. Ship *Juno*, in October 1869, anchored in 6½ fathoms, with Lady Donkin's monument N. 84° W., and Bird rock S. 11° E., and rode out gales from West, S.S.E. and S.E. A berth clear of all lost anchors, is in

6 to 7 fathoms, with a low white house on the hill south of fort Frederick on with the north end of the breakwater.

Caution.—Vessels should avoid anchoring on the wreck of the steamer *Balaclava*, which lies in about 7 fathoms, with port Elizabeth lighthouse W. by N., and Recife lighthouse South, $1\frac{1}{10}$ miles from the shore.

It is the practice of merchant vessels regularly trading for wool cargoes to moor on arrival, and to strike their top-gallant masts, and unbend sails. They are found with ground tackle superior to ordinary merchant vessels, and ride out in safety the summer gales from the S.E.

WINDS and WEATHER.—Easterly and S.E. gales, which alone are to be apprehended in Algoa bay, occur in the summer months from October to April; the worst weather usually happening during these two months, that is at the commencement and close of the season. In the remainder of the year the wind seldom or never blows from these quarters, except in rare instances, when what is called a black south-easter comes on, with rain and thick weather, of which the appearance of the sky and sea gives sufficient warning.

The approach of the summer gales is to a certain extent foretold by the irregular oscillations of the barometer, which, although constantly high, in comparison to what it would be under similar circumstances in westerly winds, falls before the increase of wind. A damp cold air prevails, and there is a constant hazy appearance about the horizon, the upper parts of the sky remaining clear. When signals to prepare for foul weather are made from the port office, where a barometer is kept, sailing vessels with doubtful ground tackle should get under way, making their first tack towards St. Croix island.

With the gale at its height a heavy breaking sea rolls in; but it has been observed that ships with plenty of cable ride easily; and, from the strong easterly current which prevails near the shore during these gales, it is probable that a powerful undertow assists to relieve the strain.

Tides.—It is high water, full and change, at port Elizabeth at 3h. 10m., and the rise is 6 feet; the tides are often irregular, being acted upon by the wind. The surface stream is uncertain in direction and inappreciable.

Time Ball.—A black ball is dropped at port Elizabeth lighthouse on the hill, at 1 p.m., mean time at the cape of Good Hope, corresponding to 1h. 28m. 34·4s. mean time at port Elizabeth—or 11h. 46m. 5s. mean time at Greenwich, every day, Sundays and public holidays excepted. If anything occurs to prevent the ball dropping at the proper time, a chequered red and blue flag will be shown from the upper window of the lighthouse, and the ball will be dropped at 1h. 5m. cape of Good Hope time. The lat. of the lighthouse is 33° 57′ 43″ S., long. 25° 37′ 21″ E.

Water is obtained from pipes at the end of the breakwater, and is put alongside vessels in the bay at 15 shillings a ton, the tank vessel containing 30 tons.

Coal for steamers can generally be obtained, but at rather high prices. It is shipped by means of large lighters or surf boats of about 20 tons burthen.

Supplies and Repairs.—Supplies of all kinds are plentiful, and moderate in price, except vegetables, which are dear. Fish may be caught in abundance, and oysters are to be obtained at low water springs. There are large forests inland, but wood is scarce near the sea. Leaky and dismasted ships are sometimes hove down, repaired, and refitted at the anchorage off the town.

A Breakwater projects eastward 1,000 feet from low water mark, with an arm 400 feet long extending to the northward at right angles to the main pier. It affords shelter for small vessels and boats. A white light is shown at the breakwater end, at the stairs of which boats can only land with safety at high water during fine weather. Caution is necessary when rounding the breakwater, as with a S.W. swell the sea breaks dangerously on the shoal extending from it. The safest course is to pass midway between the red buoy and boat jetty.

Landing.—A *green* light is shown at the end of a jetty during the night, at which boats can land at all times, except in very heavy weather.

Port Instructions.—1. In the case of vessels about to discharge or receive on board any considerable quantity of cargo, a convenient berth will be pointed out by the harbour master, as close to the landing place as the safety of the vessel and other circumstances will admit. The vessel must then be moored with *two bower anchors*, with an open hawse to the south-east, and special care taken not to overlay the anchors of other vessels, or in any way to give them a foul berth. But all vessels not provided with anchors and cables according to Lloyd's scale of tonnage are to be anchored to the northward of the other vessels until so provided.

2. In the case of vessels touching for water and refreshments, they may ride at *single anchor*, but they must then anchor well to the northward, so as to prevent danger (in case of drifting) to the vessels moored; and it is particularly recommended, when riding at single anchor, to veer out 70 or 80 fathoms of chain ; the other bower cables should be ranged, and the anchor kept in perfect readiness to let go.

3. Strict attention must be paid to keep a clear hawse (when moored), the more so when it is probable the wind may blow from the south-east ; and whether at single anchor or moored, the sheet anchor should be ready for immediate use. The situation of the vessel must be taken by land-

marks and the depth of water; and should any accident occur by which she may drift from such situation, or lose her anchors, the same must be notified in writing to the harbour master.

4. It is recommended that vessels be kept as snug as possible, especially such as have to remain some time in the anchorage, for the periodical winds blow occasionally with much violence. Top-gallant masts and yards should be sent on deck, but topsails, courses, &c., should be kept bent and reefed, until the vessel has become so much lightened as to leave her no chance of working out in case of parting, when they should be unbent and repaired, if necessary, and bent again as soon as there is sufficient cargo on board to render the vessel manageable under sail.

5. A pier has been constructed a little to the northward of the port Elizabeth boating company's jetty; and to prevent its being injured by vessels driving foul of it in south-east gales, it is ordered that no sailing ship shall anchor to the southward of a line drawn from the harbour lighthouse through the new jetty end, bearing W. ½ S. by compass. If from any cause a ship should anchor southward of these lines she must shift her berth in accordance with these instructions as soon afterwards as circumstances will permit. A green light is shown at the end of this jetty, as a guide to boats landing at night.

N.B.—Masters of vessels are especially warned of the danger of housing top-gallant masts, instead of sending them on deck, a practice which recent disastrous wrecks have shown to be very likely to endanger vessels, by precluding the possibility of the topsails being hoisted to enable them to beat out.

6. All vessels lying in this port shall show a light at night, as prescribed in articles 2 and 7 of the Board of Trade's Regulations for preventing collisions at sea.

7. When it becomes necessary for vessels to veer cables in a strong breeze, they must always heave in again to their original scope, *immediately on the return of moderate weather.*

8. All signals made from the port office must be answered from the shipping, and strictly obeyed, and any vessel disregarding them will be reported to Lloyd's, as also to the owners.

9. In a case of a vessel parting from her anchors, and being unable to work out, it is recommended to run her for the sandy beach to the northward of the town, directly in front of the gashouse, at the north end of the sea wall, on the chimney of which, at 45 feet above the sea, a powerful gaslight is shown during S.E. gales, as a guide to vessels that part from their anchors during the night, keeping the headsails set even after striking, for the purpose of assisting in grounding the vessel firmly. No person should attempt to quit the vessel after she has taken the beach,

until the lifeboat arrives alongside, or a communication is established with the shore by means of Manby's apparatus, or otherwise.

10. On all occasions where it may be considered unsafe to land, a ball will be hoisted at the yard-arm of the port office flagstaff, and it is recommended that *ships' boats* should never attempt it. A red ball is shown at the New pier end when it is dangerous for ships' boats to land.

Vessels having Marryatt's Code of signals, or the International Code, can make their wishes known to their agents in blowing weather, through the port office. Vessels not having the code, can make the following signals with their ensigns :—

1. Ensign in the fore top-mast rigging -	I am in want of a cable.
2. Ensign in the main top-mast rigging -	I am in want of an anchor.
3. Ensign in the fore rigging - -	I have parted a bower cable.
4. Ensign in the main rigging - -	I am in want of an anchor and cable.
5. Wheft where best seen - -	Send off a boat.

The following signals will be made to vessels that may be stranded, from the most convenient point :—

At night.—By means of transparent figures.

By day.—By means of white figures on a black board.

No. 1. You are earnestly requested to remain on board until assistance is sent; there is no danger to life.

No. 2. Send a line on shore, by cask, and look out for a line by rocket or mortar.

No. 3. Secure the line, bend a warp or hawser to it, for us to haul on shore, taking care to secure the warp well on board.

No. 4. Prepare to haul on board the end of the warp, which we will send you by means of the line, and secure it well.

No. 5. Lifeboat will communicate at low water, or as soon as practicable; have good long lines ready for her, and prepare to leave the vessel; no baggage will be allowed in the lifeboat.

No. 6. Secure the warp to the lower masthead, bowsprit end, or some other convenient place, and send a hauling line to us, that we may get you on shore by means of a traveller.

ANSWERS TO THE ABOVE.

By day.—A man will stand on the most conspicuous part of the vessel, and wave his hat three times over his head.

By night.—A light will be shown over the side of the vessel, where best seen.

GENERAL SIGNALS TO BE MADE FROM THE PORT OFFICE.

No. 11.	Union Jack over No. 1, Marryatt, white, pierced blue	Prepare for bad weather.
No. 12.	Union Jack over No. 2, blue, white, blue (horizontal)	Veer cable.
No. 13.	Union Jack over black, black ball with No. 2 below	Veer to a whole cable.
No. 14.	Union Jack over No. 3, white and red (vertical)	Send top-gallant masts on deck, point yards to the wind, and see all clear for working ship.
No. 15.	Union Jack over No. 4, blue triangular with white cross	Strike lower yards and topmasts.
No. 16.	Union Jack over No. 5, red burgee	Hoist a light during the night.
No. 17.	Union Jack over No. 6, triangular blue, yellow, red (horizontal)	Heave in cables to the same scope as when first moored.
No. 18.	Union Jack over black ball	Clear hawse.

The above signals may also be made at night, by showing the numbers prefixed to them in transparent figures. The answer will be a light at the peak.

Zwartkop River, about 5½ miles north-eastward of the town, has 6 feet on the bar at low water, but the surf is frequently heavy. The river is navigable for small vessels 8 or 9 miles up. Vessels may anchor off the Zwartkop, but will feel the swell a good deal.*

ST. CROIX ISLAND was so named by Bartholomew Diaz, the first European who landed upon it. Its surface is of nearly bare rock, and it is steep-to on the north-east side, but less so on the opposite side, where there is stunted vegetation. Numerous penguins and gulls resort here, and it is occasionally used for a temporary stopping place by sealers when in search of seals, which frequent the adjacent rocks, principally the one called Jahleel island.

There is fair anchorage at about 3 cables from the shore of St. Croix island, in 10 fathoms, sandy bottom, with its west peak—195 feet high—bearing S. by E. In this position the heavy tumbling sea caused by East and S.E. gales is considerably broken, but the extent of sheltered anchorage is confined to a small space by the shape of the island, which is end on to those winds, being only about 4 cables in length north and south, and 2 cables in breadth. It is often found that the surf abreast the island and at the mouth of the Zwartkop river is high and dangerous after the prevalence of S.W. winds, and continues so for a longer period than on port Elizabeth beach.*

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* Captain F. Moresby, R.N., 1820.

Brenton Rock is a little more than a mile S.W. of St. Croix; it is 50 feet high, and does not much exceed a cable in length. It is boldest on its southern side, where it may be approached within half a cable.

Jahleel Island is 3⅛ miles W.N.W. of St. Croix, and about half a mile from shore, abreast of the Coega river; it is about 1½ cables long, and 47 feet high, and may be approached within a cable or less. There is 6 fathoms water between it and the shore.

Coega River (pronounced Coohha), a little more than 5 miles from the Zwartkop, is barred at the mouth, and the water, which is very salt, flows into a small lake.

Sunday River, about 7 miles E. by N. ¼ N. from St. Croix island, and about 10 miles from the Coega river, falls into the sea close to a remarkable rock called Read's monument.† The bed of this river is deep on the northern side, but the surf beats violently over the bar, which boats can rarely pass.

The COAST from Sunday river eastward is formed by an unbroken chain of sand hills, which extend inland one to 1½ miles. Many of these hills rise to the height of 350 or 450 feet above the sea, and are quite bare.

Along the whole extent of coast included between the Sunday river and cape Padrone there is great monotony in the appearance of the land. At the back of the sand hills the country rises into lofty elevations, 1,000 to 1,200 feet above the sea, covered with grass and dense forest jungle intermixed, but there are no remarkable peaks or other objects to distinguish this particular part of the coast.‡

BIRD ISLANDS.—About E. ¾ S. 30¼ miles from cape Recife, and S.S.W. ¾ W. nearly 5 miles from Woody cape, are the Bird islands, a cluster of low rocky islets, which would be very dangerous to navigation were it not for the lighthouse, which stands on the largest of the group called Bird island, a name given by the survivors of the *Doddington*, East Indiaman, which was wrecked upon it upwards of a century ago. This island is the resort of numerous sea fowl, and is covered to the depth of several feet by an inferior kind of guano. It is 33 feet above the sea, about 800 yards long, and 630 yards wide. No water is found on it, save what little is left in the hollows of the rocks after rain. Eggs are abundant at seasons, and a very palatable vegetable, not unlike spinach to the taste, grows on it. Fish are plentiful.*

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* The information about St. Croix and Bird islands is mainly by Skead.

† So named by Captain Moresby in 1820, in remembrance of a midshipman of that name, who perished with three seamen whilst surveying this coast.

‡ Captain F. Moresby, R.N., 1820.

A light tower, which is of stone colour, square and turreted, showing a large ornamented cross on its north and south faces, but only a circular aperture in the centre of the tower on its east and west sides, stands near its south end, and is conspicuous by day, though it is not on the highest part of island. The base of the tower is 19·7 feet above the sea, base to vane 72 feet, and vane above level of sea 91·7 feet.†

LIGHT.—The light tower on Bird island exhibits at 80 feet above the sea, a fixed *red* light, visible round the horizon from a distance of 14 miles.

Stag and Seal Islets.—At about a quarter of a mile to the northward of Bird island are two islets, called Stag and Seal islands, lying in an east and west direction; they are, in reality, but one island, as they are connected at low water, but in fine weather a boat can pass between them at high water. Outside or to the north-east of these islets are rocky patches extending east and west over a space of three quarters of a mile, having 2¼ and 3 fathoms water over them; the middle rocks rise above water, and are called the North patch. These dangers lie to the N.E. by N. of the island and more than a mile from the lighthouse.

To the west of Seal island are five black rocky islets, separated from it and from the reefs which are joined to it, by a narrow passage having a depth of 2¼ fathoms. It is during very fine weather only that these islets are not surrounded with heavy breakers.

West Rock, Doddington Rock, and East Reef.—To the south-westward of Bird island there are three dangerous rocks, called West rock, Doddington rock, and East reef. The two former are awash, and the latter has 2½ fathoms over it, but the sea is seldom so smooth as not to break upon it. West rock lies with Bird island lighthouse E. ½ S. distant

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* Upon the south-east side of Bird island there is a large anchor and an iron gun, in, a tolerably good state of preservation. They are relics of the unfortunate *Doddington*, wrecked in 1755. On the beach were also found old iron hooks, bolts, and sheaves of blocks, portions of the same wreck. Upon the southern side of Stag island there were two very old anchors, which (to judge from their shape, as well as from their appearance in contrast to the one that belonged to the *Doddington*, which has been awash for a century) must have lain there two or three hundred years. They are about large enough for a vessel of 150 tons, and probably belonged to some of the early Portuguese navigators, whose career must have been checked at this dangerous cluster of rocks.—Skead.

† *See* Plan of Bird islands and view on sheet of Algoa bay, No. 642.

1½ miles nearly. From the Doddington the lighthouse bears N.E. ⅔ E. 1$\frac{2}{10}$ miles; and from the centre of East reef N.N.E. ¾ E. 1⅓ miles. Close around the West and Doddington rocks the depths are 10 to 14 fathoms, but the East reef covering a space of 2 cables east and west is more dangerous, and has 2½ and 3 fathoms water upon it.

Between and around these rocks and the islands the soundings are very irregular, and during heavy weather a tremendous sea rolls over the whole of this space, producing a surf truly terrific, the sea breaking in 8 and 10 fathoms water all around the group to seaward.

CAUTION is necessary to give the Bird island dangers a wide berth in passing, for, should a vessel get amongst them, she might run into certain destruction while trying to avoid a seeming danger, since it is difficult to distinguish between the sea that breaks in 10 fathoms and that which rolls over the reefs, and nothing of human build could hold together half an hour on any part of the cluster during a gale. Altogether, this is one of the most dangerous parts of the coast, especially to a stranger, and when doubtful of the vessel's position, if eastward of cape Recipe, do not go into less than 60 fathoms at night.

Anchorage.—The Bird island group affords indifferent anchorage on the northern side, the holding ground is not good, and the bottom is uneven. The best anchorage is with the lighthouse in line with the North patch, in 8 to 10 fathoms water.

With S.E. winds, the lighthouse in line with the boat passage between Stag and Seal islands, in 10 or 11 fathoms, is a very good spot for shelter, but should the wind come strongly from the westward, it will be found necessary to shift berth to the eastward, anchoring with the Black rocks in line with Stag island, or a little open on either side of it, in from 8 to 10 fathoms. From this latter position H.M.S. *Geyser* drove to sea in a heavy W.S.W. gale, which shows the holding ground to be bad, as she had 75 fathoms of cable out at the time.

Landing.—Vessels that load here with guano usually anchor in this last position, as it is more convenient for their boats to come off with cargo. It frequently happens that there is no landing, the rollers setting in during calm weather as well as in a gale. After these have subsided, care is necessary in landing as the sea sometimes breaks heavily and unexpectedly right across the entrance to the space between the islands. The boat must be kept well to the eastward, clear of the shoal off the east end of Stag island. The lighthouse in line with the first or western rock that shows on the white guano patch at the east end of Bird island is the best line to pull in upon, as it leads between the breakers on the spit and those off the end of Bird island.

Tides and Currents.—In the vicinity of the Bird islands no regular tidal stream was found, but a regular rise occurs. It is high water, full and change, at 3h. 15m., with a rise of 6 feet. This was observed at the Bird islands in December 1856. At the anchorage to the northward of the group the current sets generally to the eastward, and at one time, during a strong westerly gale, it ran east at the rate of 1½ knots. It was, however, upon two other occasions of westerly gales, found setting to windward. It is very seldom that anything drifts on the islands, which is singular, especially as Woody cape is covered with driftwood and fragments of wreck.

WOODY CAPE.—The first break in the sandy feature of the sea coast occurs at Woody cape, 22 miles from the Sunday river, and N.N.E. ¾ E. nearly 5 miles from the Bird island lighthouse. At this spot the sand-hills are covered with dark bushes; they present to seaward a series of decayed sandstone cliffs, fronted by a beach of rugged rock, which extends along shore for 2 miles, when the sand-hills are again met with, though not so high nor so bare as those to the westward. These reach as far as cape Padrone.

Woody cape is only remarkable from a position close in shore; the cliffs are then seen, but from the southward it is not prominent, and can be recognised only by the wooded sand-hills which rise immediately over it.

Fresh Water is found at Woody cape and about cape Padrone, welling out from the base of the sand-hills, just above high water mark. By digging into the sand above high water mark, fresh water may be had nearly all the way along this portion of the coast.

BIRD ISLAND PASSAGE.—If bound from Algoa bay to the eastward, with favourable weather, the Bird island passage is recommended. The channel is 3 miles wide and clear of danger; a vessel will carry from 10 to 15 fathoms through, and may run along the land at a distance of 2 miles the whole way to the Buffalo river. By passing inside Bird islands the strong current to the south-west is avoided.*

Vessels passing inside the islands during the night, particularly steam vessels, are recommended to keep nearer to the mainland than the group as the land is higher and more readily discerned, and the constant roar of the surf more distinctly heard than the breakers on the rocky reefs of the group. The lead with care will indicate a too near approach to the main shore, and 12 to 15 fathoms is a safe depth in passing. A wide berth should be given to cape Padrone, off which, foul ground extends half a mile nearly from high water mark.

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* Lieutenant G. T. C. Smith, R.N., 1853.

In passing outside the group, no vessel should approach within 3 miles of the lighthouse, as no advantage is gained by it, and the currents, though not generally strong, are uncertain and irregular both in strength and direction in the vicinity of the group.

If proceeding from Algoa bay to port Natal, vessels should keep 90 or 100 miles from land in order to avoid the south-westerly current.*

General Appearance of the Coast.—From cape Padrone to Keiskamma point, a distance of nearly 60 miles, the coast is mostly backed with an irregular ridge of hills, faced with sand to a height of 100 to 250 feet, with the exception of the first 20 miles, in which space the sand is much lower. The coast is intersected with numerous streams, and the land near the shore presents a fine tract of pasture country with large patches of cultivation.

Off cape Padrone, the most remarkable features are Nanquas peak (985 feet above the sea), the high sand-hills to the westward towards Woody cape, and the lowness of the sand to the eastward of the point; the first, when seen from the southward, appears as a rather flat-shaped peak, but on the vessel proceeding eastward, the peak gradually assumes a more conical form, and is the most conspicuous object on this part of the coast and one that will always be readily identified, being the only conical-shaped hill of any great height near the coast for upwards of 100 miles.

Bokness hill, some 4 miles east of Nanquas peak, is a long flat-topped bushy hill, and is remarkable, as from this hill to Glendower peak, about 13 miles farther on, the land is much lower, very uneven, and intersected with numerous ravines. When tolerably near in, False islet and Bushmen river east head become conspicuous; the former resembling as its name implies an islet. Karega and Kasuga rivers are also remarkable; and from a position off the latter several houses are visible near its mouth.

Thence to Kowie point the only remarkable sand is that seaward of Glendower peak, and a patch inland on the high bank of a stream westward of the peak; the latter is very conspicuous from a position well off shore to the southward and westward. Inland of Glendower peak there are two or three of the high grassy peaks also conspicuous from seaward.

The castle-looking house on the west bank of the Kowie, Kowie river itself, and the village on the cultivated slope on the east bank, as also the extent of high sand-hills immediately east of the river, the high head over Riet point, Groenfontein head, together with Nanquas and Glendower peaks to the westward, renders this part of the coast easy of identification.

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* The information from cape Padrone to Bashee river is chiefly by Nav.-Lieut. W. E. Archdeacon, R.N., 1868.

The high hills at Bathurst, and the range of mountains in the vicinity of Grahams town, are also conspicuous from seaward. From Riet point to Kleinemond river the sand-faced hills become again low, as also the land behind; about midway are the Black rocks or Three Sisters, conspicuous when within 7 or 8 miles of the coast.

Proceeding eastward to Great Fish point sand-faced hills become high, and when within about 1½ miles of the point there is a remarkable bare-topped sand-hill which may be easily recognised 10 or 12 miles off shore. Fish point itself is not prominent.

Thence to Fish river the coast is comparatively low as well as the land behind, which is an extensive grassy plain intersected with numerous ravines, and studded with patches of mimosa bush. The head on the east side of the river is of a peak-shape, covered with dark bush, and is remarkable from seaward.

Farther on to Stalwart point the sand-faced hills are tolerably high, and about midway 2 or 3 miles inland are two remarkable peaked grassy hills, near the village of Maitland, and are visible from all directions. This, with the dark head over Stalwart point, Fish river head, the bare-topped sand-hill west of Fish point, Black rocks, and Groenfontein head, as well as Glendower and Nanquas peaks to the westward, renders this part easy to be distinguished. From seaward Grahams town range of mountains are visible, and when in line with the valley of the river bear about N.N.W. Proceeding eastward, the Umtata river sand hills, the Bequa river sand, with the high bare-topped sand hill westward of it, westward of which again is a dark patch of bush running some distance down the face of the hill, together with a round topped grassy hill 527 feet high (N.W. about 4 miles from Bequa river) called Schiet kop, are remarkable features to identify the coast.

A square flat-topped grassy hill called Patos Kop, 900 feet in height (on the west end of which is a remarkable single bushy-topped tree) rises about N.W. by N. from Kieskamma point, and nearly 9 miles from the nearest coast. This hill, with the round-topped hill N.N.W. of Kieskamma point, the head close over the point with the house on its summit, the bushy sand hillock near the extreme of the point, and the conspicuous bare sand westward of the point, as well as the Bequa and Umtata sand hills, serve to render this locality easy of recognition.

GENERAL DIRECTIONS.—From cape Padrone to Bokness river the shore should not be approached nearer than 2 miles, beyond this to Kieskamma point not nearer than one mile, bearing in mind to give the rocks off Karega river, Fountain rocks off Kowie river, Riet point, Great Fish point, Stalwart point, Madagascar reef off Bequa river, and the rock S.W. of Kieskamma point a wide berth.

At night or in thick weather do not stand into less than 40 fathoms.

The 100-fathoms line of soundings is about 22 miles off cape Padrone but to the eastward gradually lessens its distance from the coast; abreast of Kieskamma point it is about 13 miles distant. The edge of the bank is steep, dropping from 100 to 200 and 300 fathoms, in less than a mile. The soundings on the bank, which is flat, are tolerably regular, the bottom being generally composed of sand and shells, though to the westward it is frequently found with black specks.

During westerly gales the sea is much smoother on than off the bank, the edge of which is thus generally well defined.

Currents.—The Agulhas current off this part of the coast from the Bashee river westward generally sets W. by S. or West, and varies in strength from one knot near the shore to 3½ or 4 knots an hour near the edge of the bank.

A weak current sets to the eastward near the coast at uncertain times. Close to the shore an eddy current often sets to the eastward, but its rate seldom exceeds half a knot an hour, *see* page 112.

In calm weather, and off the edge of the bank southward and eastward of cape Padrone, the current in places has been observed running like a race or overfall.

CAPE PADRONE, about E. ⅓ S. distant 9¾ miles from Bird island lighthouse, and S.E. by E. 8 miles nearly from Woody cape, is formed of sand cliffs, exceeding 100 feet in height. The beach is fringed with rocks, extending half a mile on each side of the point; off the point are several outlying rocks, some of which show at low water. The outer sunken rock lies S.E. ½ S. nearly one mile from the high part of the sand cliff on the point, and 4 cables from the nearest high-water line. The sea at times breaks with great force on these rocks.

The cape is difficult of recognition from seaward, as there is nothing remarkable to denote its position until well in with the shore, either east or west of it, when the cliffs are seen. The sand hills extend nearly a mile back from the cape and rise to a ridge of bushy hills 340 feet in height, at the back of which again the land rises steeply to the N.E., and for some distance up the slope the land is under cultivation, on which may be seen two or three houses, beyond the land is covered with dense bush.

From cape Padrone the shore trends E. by S. ½ S. 1½ miles to a sandy point, a short distance at the back of which a ridge of low beach hills commence; the hills are covered with dark bush faced with sand, and are about 90 feet high; at the back of these hills about half a mile distant commence a series of ridges parallel to the front ridge, covered with bush and attaining a height of 350 feet.

At half a mile west of the sandy point just mentioned, is a sunken rock, which generally breaks, and off the point the breakers extend to a distance of half a mile. Thence the shore trends E. by S. and a mile further on is a rocky point which extends a quarter of a mile from high water line, outside of which, at a short distance, is a sunken rock; off this again are several patches of shoal ground, the sea on the outer patch only breaking in heavy weather. The patches bear respectively S.W. half a mile, S.W. $\frac{7}{8}$ of a mile, and South $1\frac{1}{6}$ miles from the point; from the latter patch cape Padrone bears N.W. $\frac{3}{4}$ W. $3\frac{1}{8}$ miles.

The shore continues fringed with rocks, and at a distance of $2\frac{1}{4}$ miles eastward off the sandy point is another long ridge extending nearly 3 cables from the beach. The breakers extend in bad weather off this part about a mile from the high water mark, and continue that distance for 2 miles to the eastward; the shoalest spot appears to be S.E. $1\frac{1}{4}$ miles from the point and W. by S. $\frac{1}{4}$ S. $2\frac{9}{10}$ miles from False islet. Thence the shore curves and runs about E. by N. to Bokness river, the mouth of which is closed. The beach ridge here attains a height of 100 feet, is covered with bush, and sand runs some distance up its sea face. From Bokness river the shore curves out to False islet with a long sandy beach between.

Nanquas Peak.—Between cape Padrone and Bokness river, at a distance of $1\frac{3}{4}$ miles inland, is Nanquas peak, 985 feet high, dark and bushy, and sloping gradually on its east side to Bokness river. On the east side of Bokness river and about 2 miles from the coast is another high flat-topped bushy hill; both are very remarkable, the former appearing from the eastward as a conical peak.

FALSE ISLET is a dark looking head, 85 feet high, extending in an E.N.E. and W.S.W. direction half a mile, the highest part being near its south-west end; it is nearly perpendicular on its sea face, and is connected with the main land by a series of sand hillocks, the main ridge of beach hills being half a mile to the northward of it. When seen from seaward the head shows out against the white sand inshore of it, and as its name implies resembles an island.

There are several rocks around False islet which show at low water, the outer one bearing S.E. $\frac{1}{4}$ E. 3 cables from the highest part of the islet. A mile farther eastward is another point and a dark looking rock, about 50 or 60 feet high. Between the two points is a small sandy bight with several outlying rocks, and S.S.E. $\frac{3}{4}$ E. 4 cables, from the high rock, is a rock awash at low water, and close to the northward of which are two others.*

Bushmen River.—Westward of Bushmen river is a sandy beach which recedes from the shore and gradually rises to the beach hills, which are covered with bush. The mouth of the river is choked with sand and rocks but at high water the tide runs in. The southern point of the river is remarkable, being formed by a high cliff head extending 3 cables in an E. by S. direction with three irregular lumps on it; it is connected with the main beach ridge by a neck of sand against the back ground of which the dark rock shows out conspicuously; the point is fringed with outlying rocks.

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* The masters of the schooners *Rangow* and *Robert Brown* report that a breaking reef exists $1\frac{1}{4}$ miles S. by E. (*Mag.*) from False islet. Both reports were made to me at different times.—F. Skead.

Several distinct patches of rocks extend from the head south of Bushmen river in an E. by S. ¾ S. direction. The outer patch (and there are three others between) is about a cable in extent, and awash at low water; from the patch the highest part of the river head bears W. by N. ⅞ N. 1¾ miles, and Karega river mouth N.N.W. ⅜ W. three-quarters of a mile; about a quarter of a mile N. ½ E. from this patch is another also showing at low water about 2 cables long in an east and west direction; outside these patches the sea breaks for a considerable distance.

Between Bushmen and Karega rivers the beach is sandy, and for two thirds of the distance is fringed with rocks. The beach ridge is about 180 feet in height covered with bush and partially faced with sand. This strip of land between the rivers being covered with bush, and the banks of the rivers being steep renders the locality conspicuous.

Karega River.—The mouth of the Karega river is generally open at high water. Thence half a mile eastward is a point, on the low part of which are three black rocks, and S. by W. from which lie the two before-mentioned patches of rock. The beach ridge close behind is 190 feet high, covered with bush, and sand runs a short way up its sea face.

Between this latter point and the next point eastward, distance 1$\frac{2}{10}$ miles, the beach is fringed with rocks; the coast ridge rises to a height of 225 feet. On the point is a dark bushy head 150 feet high, sand runs up its sea face a short distance, and immediately inland is a dark bushy conspicuous hill 346 feet above the sea. Off this part of the coast are sunken rocks, some of which extend nearly 2 cables from high-water mark.

Kasuga River is closed at its mouth; there are some houses on the banks of the river, which are conspicuous from seaward. The beach is fringed with rocks. From the entrance of Kasuga river to the next point eastward the distance is 1¼ miles; the point projects from the beach ridge of hills, and forms a dark bushy head, 111 feet high. The beach is rocky, and off it are several sunken rocks 2 cables distant.

About 3 miles eastward of Kasuga river, is a point of land called Ship rock, black and 50 feet high. The sand beach in this locality recedes about one third of a mile to the coast ridge of hills, which are 410 feet high; the sand runs up the face of the hills, against which Ship rock shows conspicuously. At the back of the coast ridge the land becomes high and bushy.

From Ship rock to Kowie point is about E. by S. ½ S. 3¼ miles; the beach at low water is fringed with rocks. For the first 2 miles the coast ridge continues about the same height and distance from the beach, the sand extending some way up its sea face in an irregular manner; the ridge then closes to the beach with a sand streak running up to behind the ridge, which from the westward is remarkable.

About two thirds of a mile westward of Kowie point and a short distance from the coast are two sunken rocks.

Glendower Peak.—At the back of the beach ridge, a high grassy head rises 622 feet above the sea, called Glendower peak; it is tolerably steep on both sides, its western side dropping to a small stream, which having no outlet soaks through the beach ridge. There is a conspicuous sand patch on the high part of the west bank of the stream, about a mile from the coast.

KOWIE POINT.—From Kowie point, which is low, the shore trends E. ½ N. about 1¼ miles to Salt Vlei point, westward of which is a sandy bight called Salt Vlei bay; to about midway the beach is fringed with rocks, at which distance there are several outlying rocks 2 cables from the shore. The beach hills are low, covered with dark bush, and rise from a narrow sandy beach. Midway between the points and half a mile in shore, is a remarkable black bushy hill, 300 feet high.

A small rivulet runs into Salt Vlei bay; the land here is low and grassy gradually sloping down to the beach, at a quarter of a mile from which is a large farmhouse, and on a small rise to seaward of the house is a flagstaff.

SALT VLEI POINT is low and rocky, and near its extremity is a small bushy sand hillock, 33 feet high, connected with the main beach ridge by a neck of sand. Nearly 2 cables to the north-east, of Salt Vlei point is another sandy point, on which is a small bushy hillock 29 feet high; rocks extend seaward from this point nearly a cable. To the eastward of the point is a small bight and the beach is fringed with rocks; thence the shore extends to the west head of Kowie river.

From the last-mentioned bushy hillock the beach ridge of hills extends N.E. by N. a short distance, and then E.N.E. to Kowie river, to which they drop abruptly; they are irregular and vary from 60 to 140 feet in height, covered with bush, and near the river are faced some way up with sand; the highest part of the ridge is near the river. Between the base of these hills and the beach the sand is nearly flat, with a few sand ridges near the river from 20 to 25 feet in height.

KOWIE RIVER.—This river rises near Grahams town, 40 miles from its mouth, and is navigable for small vessels for about 5 miles, and for boats for upwards of 16 miles, the scenery being exceedingly beautiful and picturesque, the banks wooded to the water's edge, varied in the upper reaches above Mansfield with grassy slopes and high steep cliffs. Game is abundant, herds of buffalo still exist in the Kowie bush, and bucks are numerous, particularly the bosch bok and blue bok. Fish is also abundant in the river, and off the Fountain rocks at the entrance, of excellent quality. The Kowie is one of the favourite watering places on the coast, the warm Agulhas current running down the coast from the southern tropic moderating the cold of winter—frost being almost unknown—and rendering it a genial resort for invalids.*

The river originally emptied itself into an extensive sandy basin, the water thence forcing its way through a narrow channel on the eastern side into the sea. Its course, however, has been diverted at a point about a mile from the entrance, and now runs along close to the western shore between two stone embankments, of an average breadth of 70 yards. On the west side of the river about half a mile from the entrance, is the town of port Alfred, and on a sandy hill 95 feet high, and covered with grass and bush is a large square house, the residence of the Hon. Mr. Cock, to whom the credit of carrying out the river works to their present efficient state is mainly due.

Port Alfred is a rising seaport town, 36 miles from Grahams town, and possesses a considerable trade and many advantages as a harbour for coasting and small vessels of 9 to 10 feet draught. Here there are extensive stores, custom and bonding warehouses, and other buildings with every facility for landing and shipping goods, also a steam tug of 25 horse power, and lighters for loading and discharging at the outer anchorage. The loading and discharging place is abreast of the mill, about 580 yards above the signal staff at the port office on the west bank. The custom dues at port Alfred reach upwards of 20,000*l.* a year, and many vessels some it is said as large as 300 tons, enter the port yearly. It is proposed to make an excellent and commodious dock to be called the Marie dock above the present wharves, and other improvements are in the course of being carried out, much to the importance of the port.

In 1875, 66 vessels, amounting to 13,152 tons, entered inwards, foreign and coastwise; and 66 vessels, amounting to 32,018 tons, cleared outwards, foreign and coastwise. In the same year the value of the imports was 187,008*l.*, and that of the exports 51,370*l.*

Vessels approaching the river from the westward may identify its position by the conspicuous sand hill under Glendower peak, 3½ miles westward of the river; the adjacent country consists of smooth grassy slopes dotted with bush and fronted with a line of sand hillocks. From the eastward, Black rocks or Three Sisters, 7 miles eastward of the river, will with the houses and flagstaffs at port Alfred, serve to identify the land-fall. *See* page 98. At night the shore should not be approached too near, on account of the Fountain rocks; attention to the lead, and a good look-out should be kept.

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* *See* Admiralty plan:—Entrance of Kowrie river, No. 1,223; scale, m = 6 inches.

LIGHT.—Near the extremity of the western pier, and at an elevation of 40 feet above high water, is a *fixed green* light, visible from seaward between the bearings of E.N.E. and W.N.W. from a distance of about 6 miles. As this light is only visible at a short distance in clear weather, it should not be depended upon for approaching the roadstead in thick weather.

Beacons.—To the eastward of mount Cock house is a flagstaff painted white which forms the inner mark for the bar. The outer beacon is S.S.E. ¾ E. easterly, 176 yards from the flagstaff on a small bushy sand hillock, and is formed of two poles with cross bars (resembling a ladder) above which is a sliding pole with a ball on the top, the whole painted red.

The port office signal staff stands on the west wall N.N.W. ⅔ W., 180 yards from the outer end, and is in lat. 33° 36′ 9″ N., long. 26° 54′ 10″ E. The east pier head bears East 113 yards distant from the flagstaff. Off the outer end of the west pier, about 25 yards distant, is a rocky ledge, beyond which it is proposed to extend the pier. Abreast of the signal staff and extending from the west wall a distance of 29 yards is a stony bank, dry at low water, and on its extremity is a tripod formed of three large poles 7 or 8 feet above high water; this bank narrows the entrance of the river to about 50 yards.

At 1¼ miles within the entrance on the east bank and where the wall commences are quarries, which are visible when the river appears open. Half a mile lower down on the high banks and on the same side is a village on a cultivated slope.

The Bar of Kowie river commences in about 3 fathoms, at the distance of a cable outside the extremity of the west pier, and the water gradually shoals to 9 feet abreast the pier head; nearly abreast of the east pier head it shoals to 8 feet, deepening again to 10 feet as the tripod on the stony bank (before described) is passed; all danger then is passed. Inside of this, and abreast of an old building, on the eastern wall 160 yards from its extremity, it shoals again to 7 feet.

Nav. Lieut. Skead, R.N., in 1876, writes:—The bar is of sand over rock; the passage across the bar varies considerably in direction, position, and depth. Westerly and south-westerly gales send in a heavy swell, which drives large quantities of sand into the river's mouth; a deposit which the ebb tide does not immediately remove. Thus the bar becomes shallow for a time, the depths varying from 9 to 10 feet at high water. In fine weather, however, vessels of 9 feet draught, with the assistance of a tug and a pilot, cross the bar in safety.*

On a vessel appearing off the port, and signalling to the port office, all information will be given, and as soon as the bar is passable a steam tug with a pilot will be sent out, but a stranger should not attempt to cross the bar without the aid of a pilot. Mount Cock flagstaff in line with the red beacon bearing N.N.W. ¾ W. (the south-west corner of the mill is also on the same line) leads over the bar. A black ball is hoisted at the port office flagstaff, when the bar is unsafe for vessels to pass. Ships' boats should not attempt to cross the bar; the most favourable appearances are deceptive.

Pilots.—Pilots are always in readiness with the steam tug to take vessels in and out, and no vessel should attempt to enter even under the most favourable circumstances without a pilot. A tariff is fixed for the use of the steam tug, but no charge is made for pilotage.

Supplies.—Water is scarce and of indifferent quality. Provisions may be obtained. Ballast, either earth or stone, is obtainable, a fixed charge being made for the use of the tug in bringing it off.

Port regulations and local information will be furnished by the port authorities.

Signals.—The International code of signals is used at the port office, with which communications can be kept up. Port Alfred has postal communication twice a week, and telegraphic connexion with the whole colony.

Port office signals.—A number (indicated by one flag) is given to every vessel upon arrival.

Black ball over union jack - Veer to a whole cable, and see second anchor clear.
Black ball under union jack - Put to sea at once, get an offing.
Union jack at masthead - Send down top-gallant yards and masts, point yards to the wind, and see all clear for working ship.
Black ball over the ensign - Bar cannot be crossed.

A blue flag will be shown at the west yard-arm of the flagstaff on the flood tide, and a red flag on the ebb.

At night.—A rocket fired across the river - Bar cannot be crossed.

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* In June, 1877, vessels drawing 9 ft. 6 in. could enter at springs.—William Clifford, Harbour master.

Vessels not having the International code of signals can make the following signals with their ensigns, namely:—

1. Ensign in fore topmast rigging - In want of a cable.
2. Ensign in main topmast rigging - In want of an anchor.
3. Ensign in fore rigging - - Parted a bower cable.
4. Ensign in main rigging - - In want of anchor and cable.
5. Wheft where best seen - - Want assistance or a tug.

Tides.—It is high water full and change at Kowie river at 3 h. 50 m.; springs rise 4 to 5 feet, neaps rise 3 feet. The tides are influenced by the winds, varying from 6 inches to a foot; they fall with easterly winds and rise with westerly winds, and at high water in southerly gales a heavy swell and undertow are experienced up the river. The influence of the tide reaches 12 miles up the river.

Current.—No regular ebb and flow of tide is felt in the roadstead, but a current often sets against the wind, and assists vessels in riding out strong gales. Vessels cant a point or two according to the strength of the wind, but scarcely ever lie broadside to the wind.

With westerly winds and fine weather the current, at about 2 or 3 miles off shore, sets invariably to the eastward; after a day or two of strong easterly winds it runs to the westward, but only for a short time.*

Winds.—The prevailing winds in the summer months are from East to S.E., and in the winter months from West to S.W.; vessels can enter the river with the winds from W.S.W. round by south to E.N.E., but the wind is seldom to the northward of East except during the summer months in the morning until 8 or 9 o'clock, when it comes in from the S.E. for the day, and is a smooth water wind.*

Dangers.—A shoal with only 2½ fathoms on it at low water, and 3½ fathoms inside of it, lies with Bushy hillock on Salt Vlei point bearing W. by N. ½ N. distant 8 cables, and the signal staff on the west pier head N. ½ E. 5 cables. Another shoal with 3¾ fathoms, and on which the sea breaks in bad weather, lies with the extremity of the west pier head bearing N.W. by N. distant a third of a mile, and is near the line for crossing the bar. These shoals are just without the shallow ground which extends in places nearly half a mile from the shore, on the west side of entrance to the Kowie river.

The Fountain rocks and shoals cover a space of nearly three-quarters of a mile east and west, and more than 4 cables north and south. Some of these rocks are awash at high water, others uncover at half tide, and the sea always breaks on the southern or outer patches.

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* H. A. Joss, Harbour master, port Alfred, 16th March 1865.

The south-western of these dangers has only 1½ feet water on it, and the sea always breaks. It lies with the flagstaff on the west pier bearing N.W. ¾ W., distant 1$\frac{1}{10}$ miles, and Atherstone point N.N.E. ½ E. 7 cables nearly. The south-eastern patch, 1½ cables eastward of the latter, has 3 feet water on it, the sea always breaks, and it lies with the flagstaff on the pier bearing N.W. by W. westerly distant 1¼ miles, and Atherstone point N. by E. ½ E. nearly, 6½ cables. There are 5½ to 8 fathoms close to these outer patches, and from 1½ to 6 fathoms between the rocks in general.

Jansens Rock lies E.S.E. southerly 3½ cables from the east dry rock of the Fountain group, and is awash at low water; there are 5 fathoms water close to the eastward and 9 fathoms southward of the rock.

Clearing marks.—The quarries on the east bank of Kowie river, bearing N.N.W. ½ W., and kept open west of the ridge rising to the old custom house leads westward of Fountain rocks; and the gap in the cliffs near the outlet of Rufane river, bearing N.N.E. ½ E., leads eastward of the rocks.

There is a channel between Fountain rocks and the shallow water extending from the shore, with 3¼ fathoms in it; the leading marks for which are, Sand patch just open south of Bushy sand nubble on Salt Vlei point bearing West. The sand patch is difficult to make out, and therefore vessels should not use this passage.

Anchorage.—The outer anchorage off Kowie river is in 12 to 15 fathoms, sandy bottom, with port office signal staff N. by W. to N.N.W., and the gap in cliffs at outlet of Rufane river bearing N.E. to N.E. ½ E. There is also an inner anchorage, in 9 fathoms, a short half mile to the N.E. of the above. From the outer anchorage a vessel can put to sea at any time, or slip the cable in the event of a gale of wind, as it seldom blows directly on shore.

Nav. Lieutenant Skead, R.N., states :—The limits of the roadstead may be included between a S. by E. line from the river's mouth and a S. by E. line from Fountain rocks (these two lines are about a mile apart), at 1¼ miles from the shore, and in 15 to 17 fathoms water. The best anchorage is with the river's mouth bearing N.N.W. ½ W. to N.W. by N., in not less than 15 fathoms, as in bad weather the water breaks inside this depth. The bottom is rocky interspersed with patches of sand, the holding ground is not good. Large vessels should anchor farther out, and veer to 80 fathoms of cable, they will thus ride easily. The cables should be ready for slipping, and the spare anchor should be ready for letting go; vessels should also be prepared to put to sea at short notice. The latter alternative should be taken at the commencement of the gale—the indications of which are pointed out by signal at the port office—and more especially at the commencement of black south-easters.

In case of putting to sea, masters of vessels should bear in mind that the Agulhas current sets to the westward frequently at the rate of 80 to 90 miles a day, and that moderate shelter may be found at Bird islands, Algoa bay.

COAST.—From the east pier head of Kowie river, the sandy beach extends eastward rather more than 1⅒ miles to Atherstone point, and nearly midway the beach is fringed with rocky ledges for a space of about 3 cables, which run in a southerly direction from the beach.

Atherstone point is low, sandy, and fringed with rocks. Along this part of the shore the sand gradually ascends to the coast ridge of hills, which are half a mile inland. This ridge commences at the eastern head of Kowie river, on which are the old custom house buildings, and extending in an E. by N. direction 1¾ miles, varies in height from 230 to 350 feet; the summits of the hills are covered with bush, and the sand reaches up their sea faces nearly to the top, but near the west end of the hills the bushes grow farther down. There are two conspicuous bare sand hills immediately in front of the ridge, 145 and 254 feet high, rising respectively at two-thirds and 1¾ miles from the east head of the river. A short distance east of the west sand hill, and at the foot of the ridge, is a patch of bushes, and from the eastern one a lower ridge of bushy sand hills extends eastward to Rufane river.

The shore from Atherstone point trends E. by N. ½ N. one mile to Rufane river; the beach between curves slightly to the northward and for 4 cables is fringed with rocks, when a sandy beach follows to a small patch of rocks within 1½ cables of the river's mouth, which is closed. The hills between which the Rufane river runs, are a quarter of a mile from the beach, the eastern being the higher rises to a height of 265 feet, covered with bush, and sand extends someway up its sea face, and about half a mile farther eastward is a remarkable bare-topped sand hill 264 feet high.

About 4 cables beyond the river is Rufane point, the sandy shore between being skirted with rocks as well as the point; thence to Riet point about 2¾ miles farther on the shore slightly recedes, with several small rocky points and sandy beaches between. Half a mile westward of Riet point are some outlying rocks, 2 cables from high water line. The shore here is backed by hills from 345 to 380 feet high, and faced with sand; their summits are covered with bush; in one or two places the sand stretches in an oblique direction to the top of the hills, which when close in to the westward is remarkable. A mile westward of Riet point, immediately behind the coast ridge, is a hill covered with grass and bush 486 feet high; the land falls abruptly inshore of it to about 300 feet, and when seen from east or west is conspicuous.

Riet or Reed Point is low and sandy, and off it are several sunken rocks, extending 4 cables from the point. The sea breaks a considerable distance off the point. The R.M. steam ship *Danube*, of 2,000 tons, struck on the rocks off this point and sustained considerable damage in February 1874. Vessels should give the point a wide berth in passing. At 1½ miles eastward of the point are the Black rocks (Three Sisters), and between is a deep indentation; near the middle of the bight Riet river drains out. West of the river the shore is sandy, but to the eastward, as far as the Three Sisters, it is fringed with rocks.

Black Rocks or Three Sisters are three dark brown looking rocks, connected with the shore by a narrow neck of land, against which they show conspicuously against the white sand behind, and appear like an island.* They lie east and west of each other, the central one, 50 feet high, being the highest, and on their sea side they are nearly perpendicular; at high water the sea washes up to and around their base.

To the eastward of the Black rocks are several outlying sunken rocks, the outer one lying S.E. by E. ½ E., 4 cables from the highest Black rock, and 2 cables off shore.

At 6 cables beyond the Black rocks is a low sandy point, and off it are several outlying rocks, extending 3 cables in a S. by E. direction, outside of which the sea breaks for a considerable distance. The hills at the back of this piece of coast are low, the land gradually rising from the ridge, and at a distance of 2 miles is about 300 feet in height, and cultivated.

Kleinemond Rivers.—From the last mentioned point the sandy shore trends N.E. by E. one mile to Kleinemond rivers. These two rivers, which are generally closed, are separated by a narrow strip of land, and a short distance off appear as one river with two arms to it; they flow through a low country, covered with grass and patches of bush. The hill on the east side of the river is 177 feet high, and in front of it is a small patch of rocks extending from the beach, and about midway between it and Fish point are two other small patches; with these exceptions the beach is sandy.

The COAST from Kleinemond rivers trends E. by S. 3½ miles to Great Fish point. The hills near the sea are high and bushy, faced with sand nearly to their summits, and 1½ miles eastward of Kleinemond rivers attains a height of 350 feet, from which point a patch of straggling bushes extends to the base of the hill in a S.W. direction, Three-quarters of a mile eastward is the highest part of the ridge, being 390 feet above the sea, and on the east side of it the sand is bare on the top, forming a remarkable sand hill, which is conspicuous from seaward.

GREAT FISH POINT is low, sandy, and fringed with rocks; near the extremity of the point is a small sand hillock, and off the point is a rock, which shows at low water; it bears from the sand hillock S.S.W. nearly half a mile. There is a depth of 12 fathoms 3 cables outside the rock. The coast hills rise in a short distance to a height of 260 feet, sand running up a considerable way on their sea face, above which they are covered with bush.

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* J. D. Milne and J. Richards, masters, R.N., 1847,

From Great Fish point the shore trends about E.N.E. 1¾ miles nearly to Little Fish point near the entrance to Great Fish river. The intervening beach is sandy, with two rocky points. East three-quarters of a mile from the sand hillock, and about a quarter of a mile off shore, is a half tide rock, outside of which and off the rocky points the sea breaks. The coast ridge between the point and the river varies from 80 to 140 feet in height, and is partially faced with sand.

GREAT FISH RIVER.—Little Fish point, near the south-west side of entrance to Great Fish river, is rocky and uncovers a considerable distance at low water, the hill over it is 140 feet above the sea, covered with bush and partially faced with sand. A sandy beach extends to the north-east from the point nearly reaching the opposite shore of the river, leaving only a narrow channel through which the river runs into the sea.*

The north-east point of entrance is formed by three dark rocks, 25 feet high, extending in a S.S.W. direction; outside and around which are several other rocks, but showing only at low water; those on the west side of the point contract the entrance and are exceedingly dangerous. The most western lies W.S.W. a cable from the highest part of the outer high rock; the outer south-eastern is a cable S.E. ½ S. from the same rock, and thence they extend to the north-east, the most eastern bearing E. by N. ⅛ N. three cables from the outer high rock. The sea breaks a considerable distance outside all these rocks and occasionally with great violence.

At 3 cables within the point, on the north-east bank, is a dark bushy peak 100 feet high, rising steeply from the river, and remarkable from seaward. Near the base of the peak is the narrowest part of the entrance, which is about 20 yards wide, and here the water appears deep for a breadth of about 10 yards, where the sea does not break successively, having at times an interval of five minutes, when a boat could easily land; but when the sea does break it is with treble the violence of the constant rolling surf along the sand before the river's mouth. At particular seasons the river rises considerably, when the current becomes too strong for vessels to enter; at other times the river is a mere stream, and the current then would hardly turn a mill.† The distance between the peak and the hill over Little Fish point is nearly half a mile.

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* *See* View on chart, No. 2,085.

† Captain F. Moresby, R.N., 1820.

The mouth of the river is always open; the north-east bank is steep and bushy; the south-west is flat and grassy: the river takes a N.N.W. direction for some miles and extends more than 100 miles into the interior and after heavy rains a great body of water disembogues, and after running, seaward a considerable distance is turned to the westward by the general westerly current. The position of Great Fish river may be made out in clear weather by some distant hills of an undulating form, which bear N.N.W. when on with the ravine through which the river flows. The river makes apparently a very perceptible gap in the coast line if near the land, and its water in the rainy season or after freshets preserves its muddy colour a long distance in the offing.*

The country is open, interspersed with picturesque ravines, generally clothed with bush, and the land on the western bank is of rich black earth covered with pasture. In fine weather a haze frequently obscures all the lower part of the land, whilst objects on the hills are very distinct.

Current.—The water of Great Fish river is of a red colour and may be traced after rain for some miles westward of Kowie point, but is seldom seen to the eastward of the river; from this fact it is evident that an easterly current near this part of the coast, though occasionally experienced, is not a constant or frequent current.

Waterloo Bay.—From the east point of Great Fish river the shore curves slightly to the western part of Stalwart point, which bears East distant about 4 miles from the high rocks. There are two streams between, which are closed with sand. The western part of this curve is called Waterloo bay. All vestiges of the establishment that existed here in 1846 and 1847 have disappeared. The coast hills rise steeply from the beach to a height of from 180 to 250 feet, faced with sand nearly to their summits, which are covered with dark bush; the highest part of the ridge is about 2 miles eastward of the river.

Immediately eastward of the high dark rocks and inshore of the eastern low water rocks, is a small sandy beach, followed for about three-quarters of a mile with a beach fringed with rocks, when it becomes for about half a mile clear; about 1¾ miles from the mouth of Great Fish river, a ledge of rocks extends eastward two-thirds of a mile, and projects from the beach a distance of nearly 2 cables; a cable off the eastern extremity of the ledge is a small sunken rock; thence to the western part of Stalwart point the beach is sandy and free from rocks.

Anchorage.—The anchorage should not be in a less depth than 9 fathoms, with Great Fish point bearing W. ½ S., and the south-west end of the rocks about half a mile eastward of the Rocky head about N. by W. This is, however, an exposed rocky anchorage, and the rollers which occasionally set in during calm and foggy weather render it unsafe.

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* *See* View on chart, No. 2,085; and plan of Waterloo bay, No. 1,926; scale, m = 4·0 inches.

Vessels should always be ready to slip and put to sea, in the event of a S.E. wind or rollers setting in, and should not remain longer at the anchorage than absolutely necessary. H.M.S. *Apollo*, with the 73rd Regiment on board, was nearly lost here, in consequence of the rollers setting in and the cables having parted; the vessel was saved, but with the loss of four anchors. It is from these causes that the loss of anchors has been so frequent an occurrence in Waterloo bay.

Large ships should avoid this anchorage, but, if obliged to call here, they may anchor in 14 fathoms at a considerable distance from shore, in which depth the bottom is clean and good holding ground, coarse sand; but this is too inconvenient a distance for the surf boats to come out.

The Landing was formerly effected in the bay between the rocks of Rocky head and those to the north-east of them, in surf boats, and with them it was difficult. A great strain was brought on the surf lines by the strong current setting along the shore.

Tides.—It is high water, full and change, at Waterloo bay, at 4h. 0m.; springs rise about 6 feet.

STALWART POINT.[*]—From the west part of Stalwart point, the shore eastward is fringed with an almost continuous series of ledges extending in a southerly direction a quarter of a mile from the beach, off which at a short distance are several small sunken rocks. The sea breaks in bad weather a distance of three-quarters of a mile from the shore.

Stalwart point is broad and rounding, the beach narrow, and the coast ridge near its west end 224 feet high, but is much lower towards its eastern part. The hills are of sand some distance up their sea face. Near the west end of the ridge the sand stretches up at the back of it from the westward a considerable distance, but is not remarkable except when close in to the westward. From this ridge the grassy land at the back rises in a short distance to a height of 377 feet and slopes on both sides of the point; on its western slope are two or three farm houses visible from seaward.[†]

Impekquina River, an insignificant stream, is generally closed, and is E.N.E. 1¾ miles from west part of Stalwart point; half a mile westward of the river the before-mentioned rocky ledges cease, and the beach is free from rocks until just past the river. A little west of the river is a dark bushy head 144 feet high partially faced with sand, and at the back of which, a quarter of a mile inland, is a white house visible from seaward.

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[*] So called from a boat having attempted to land on it belonging to a ship of that name. The ship was abandoned in a gale off the coast in the winter of 1865; only three out of 15 men composing the boat's crew were saved.

[†] *See* Admiralty chart:—Waterloo bay to Bashee river, with views, No. 2,086, scale, $m = 0{\cdot}3$ inches; and view on chart, No. 2,085.

Umtata River.—From Impekquina river the shore trends east 1½ miles to Umtata river, which is generally open. The intervening shore is fringed with rocky ledges extending from the beach at low water a considerable distance, outside of which the sea breaks a long way off. The coast ridge is covered with bush, and from about half a mile east of Impekquina river the sand reaches to its summit.

The hill on the west side of Umtata river is 261 feet high, and is a third of a mile from the outer part of the beach; the sand for some distance not being so high renders it remarkable. The hill on the east side of the river is 149 feet high, covered with dark bush, and faced with sand a short distance up. Off this hill a ledge of rocks extends from the beach; outside the ledge there are some sunken rocks which bear S.S.E. from the highest part of the hill, and distant a quarter of a mile from high water line.

From Umtata river to Golana river (which is closed) is E. by N. one mile, and for about half way the beach is fringed with rocks. The coast ridge between is covered with dark bush and partially faced with sand. A rocky point extends from the east side of the river, outside of which is a detached rock 2 cables from high-water line.

Bequa River is 3 miles eastward of Golana river. The beach between is fringed with rocky ledges extending in a southerly direction nearly 2 cables from high water line, a short distance outside of which are several sunken rocks. The coast ridge rises steeply from the beach and gradually increases in height as Bequa river is approached; sand extends up the sea face nearly to the summit, which are covered with dark bush except the highest point of the ridge, which is bare sand, 308 feet high, and three quarters of a mile westward of Bequa river; this is the last bare sand hill for many miles. About half a mile west of this sand hill a patch of bushes extend from the top of the ridge nearly to its base, and renders this piece of coast remarkable and easy of recognition.

A long rocky point extends from the beach about a third of a mile westward of the mouth of Bequa river, off which are some sunken rocks a quarter of a mile from high water line; they bear S.E. ½ S. from the bare sand hill. The mouth of Bequa river is generally closed. Its east side of entrance is low and bushy, and in front of it the beach is fringed with rocks.*

Madagascar Reef.—Outside the rocks last mentioned, nearly half a mile from the shore, is a cluster of ledges, called Madagascar reef, which is 7 cables in length, in an east and west direction, and a cable in breadth. The highest ledge is near the middle, farthest off shore, and covers at high water. From it the bare sand hill west of Bequa river bears N.W. by W. ½ W., the west extreme of the hill on the east side of entrance of Bequa river N.W. ½ N., and the east extreme of the hill on the west side of entrance of Gosha river N.E. by E. The sea always breaks over the reef and a wide berth should be given to it; a third of a mile seaward of the reef the depth is 12 fathoms.

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* *See* View on chart, No. 2,085.

Gosha River.—From Bequa river to Gosha river about 2¼ miles farther on the shore is composed of a broad sandy beach, and midway fringed with rocks at low water. The coast ridge is not so high at first and only partially faced with sand, but as Gosha river is approached it rises to a height of 270 feet, the sand reaching near to its summit; a short distance west of the river a patch of bush rising from the base of the ridge for about 40 feet is remarkable.

At 3 miles from Gosha river is a point, on the east side of which a small stream discharges; at a distance of a quarter of a mile, and one mile respectively from Gosha river, two small streams empty themselves. The coast ridge is high, covered with bush and faced with sand, attaining a height of 220 to 270 feet. Behind the point are two dark bushy heads, on the west side of entrance of the stream, which is on the east side of the point. East of this is a rounded point fringed with rocks, on the east side of which is another small stream 2½ miles westward of Keiskamma point.

From the last-mentioned stream to Keiskamma point the beach is sandy and fringed at low water with rocks. The coast ridge is high and partially faced with sand to a height of 40 to 70 feet, except in one spot about 2 miles west of the point, where the sand rises obliquely to the summit of the ridge, and attains a height of about 220 feet; this ridge is remarkable from the southward and westward. Immediately behind the land rises to a height of 300 feet, is covered with grass, and about half a mile westward of the point forms a remarkable green head, on the summit of which is a large white house visible from all directions.

A mile W.S.W. from the bushy hillock on Keiskamma point, and 3 cables from the nearest shore, is a rock which shows at low-water springs. Outside the rock the sea breaks heavily in bad weather, and it therefore should be given a wide berth.

APPEARANCE of the COAST.—Between Keiskamma point and Buffalo river, which are about 27 miles apart, the land appears high, covered with grass and bush in patches, and is intersected with several streams and deep ravines. The shore is backed with an irregular ridge of coast hills, which are covered with dark bush, and at intervals faced with sand.

The high head near the coast, west of Keiskamma point, with a white house on its summit, together with the bushy hillock on the point, and a round topped grassy hill 3 miles N.N.W. inland of it, (which is visible from all directions and from seaward a clump of bush is seen on its southern slope,) as well as the river presenting a wide opening, renders this part easy of recognition from the southward.

In this vicinity, at a distance of 5 or 6 miles inland, the land rises to a height of from 600 to 700 feet, and when well off the coast a range of mountains 2,000 to 3,000 feet in height, which are in the vicinity of King Williams town, may be seen. The range in the vicinity of Grahams town is also visible to the N.N.W.

Soundings.—The soundings between Keiskamma and Bashee rivers, with the exception of the 10-fathom patch off the former, are tolerably regular and flat, and as a rule the nature of the bottom is sand and shells. The edge of the bank, which is 10 to 13 miles from the shore, is almost perpendicular dropping from 100 to 200 or 300 fathoms in less than a mile.

GENERAL DIRECTIONS.—Between Keiskamma and Bashee points vessels should not under any circumstances approach the shore nearer than a mile, or at night and in thick weather under 40 fathoms. The edge of the bank of soundings is always well defined, both in fine weather and heavy gales; the sea being always smoother on than off the bank. The distance of the soundings under 100 fathoms from the coast line is 10 to 13 miles.

KEISKAMMA POINT is low, sandy, and fringed with rocks; near its extremity is an isolated, bushy-topped sand hill, 110 feet high, which when seen from the westward and from a position near the coast appears like an islet. About a third of a mile inside the point the coast hills rise precipitously to a height of 200 feet, with sand stretching some way up their sea face, above which they are covered with dark bush; farther in the land is high, and covered with grass.

Keiskamma River.—The entrance to this river is $1\frac{1}{10}$ miles to the north-east of Keiskamma point; the beach between is sandy, and curves westward. At the south-west point of entrance of the river is a hill 205 feet high, covered with bush, and rises suddenly from a low sandy spit, which extends across nearly to the east side of the river, a distance of about half a mile. The north-east point of entrance is low and rocky, extending from a hill 152 feet high, covered with dark bush, and close to its base, between it and the sandy spit, is the channel of the river, which is about half a cable wide at low water, and apparently deep. Inside this entrance the river opens into a large basin about a mile in extent, which at low water is partially dry; the main stream extends to the northward, from the west side of the basin, and many miles into the interior, draining a large tract of country.

On the west bank of the river are two small German villages, called Hamburg and Bodiam; the former is about a mile, and the latter 5 miles from the entrance. Boats have been known in fine weather to leave and enter the river in safety, but such an occurrence is not frequent, and it is always attended with danger, as no dependence can be placed on the bar, the depths on which alter after every gale or heavy rain. The surf breaks heavily off the river, and in bad weather extends a long half mile from the shore. A quarter of a mile E.S.E. of the narrow entrance, and about a cable from the shore, are several rocks, some of which appear at low water.

A 10-fathom patch, with 15 fathoms inside it, lies with the mouth of the Keiskamma bearing N.N.W. ¼ W. distant 1½ miles, and the bushy sand hill on Keiskamma point N.W. by W. ¼ W. $1\frac{8}{10}$ miles.

The coast about the Keiskamma is double or treble and about 500 or 600 feet above the sea, with patches of white sand 80 or 100 feet high, conspicuous against the dark land. Keiskamma river may be made out from sea by a mountain of a conical shape flattened at the top standing by itself, and a short distance to the eastward another high mountain which has three distinct elevations and falls; when these mountains bear N.N.W. they are in a line with the entrance of the Keiskamma. The north-east point of entrance is low and rocky, running from a remarkable little green hillock detached from the one where the bank begins to rise. The south-west point of entrance is a sandy hillock.

Tides.—It is high water, full and change, at the Keiskamma, at about 4h. 0m.; springs rise about 6 feet.

The COAST from the outer part of the point on the east side of Keiskamma river, on which is a small grassy hillock, extends eastwards 1½ miles, when it recedes slightly for about a third of a mile, and then trends eastward again to Chalumna river; there are several streams between, two of which, like most of the small streams on this coast, are choked with sand; the eastern stream, called Guanie river, is open at high water, when the tide runs in about a mile.

The shore to Guanie river is sandy and fringed with rocks at low water, with the hills rising suddenly from the beach to a height of from 150 to 270 feet, faced with sand some way up, above which they are covered with dark bush.

About a quarter of a mile west, and a third of a mile east of Guanie river, are two remarkable bushy-topped sand peaks, the eastern one more particularly so, as the hill at the back of it, which rises steeply to a height of 430 feet, is covered with grass, against which the dark appearance of the peak forms a striking contrast. The hill at the back has two lumps on it, which, with the fact of its being the highest head near the coast for many miles, is also conspicuous.

Chalumna River is 6¾ miles eastward of Keiskamma point; a sand bank extends across its mouth at low water; at high water the tide runs up the river 6 or 7 miles.

There are several outlying dangers off, and to the eastward of Chalumna river, and from the west point of the river they bear respectively S.E. ½ E. distant half a mile, E. by S. ½ S. three-quarters of a mile, and E. by S. ¼ S. nearly a mile, and are about 1¼ cables from the nearest shore.

The COAST from Chalumna river is rocky, and trends eastward 1¼ miles to a rocky point, at the back of which the sand extends some way up the face of the coast hill; at three quarters of a mile beyond the point is a small stream, on the west point of which is a bushy sand peak; at a mile farther on is another point, between which the coast is comparatively low, and covered with bush and grass. From this point the coast curves inward for a short distance, forming a small bight, and then trends about E. by N. At the back of this bight is a remarkable black bushy hill, on the west side of a small stream; the sand extends up its south-east face to a height of about 70 feet. The beach in front of the stream extends out a long distance, and at its extremity is a small rock formed of red sandstone 8 feet above high water.

Thence the beach is sandy, and fringed with rocks for about 1¼ miles to a small point, on which is a small grassy ridge 20 feet high; the coast hills rise directly from the beach, are high, and faced with sand. At 3½ cables S.W. by S. from the point is a dangerous breaker. At two-thirds of a mile farther on is the entrance to the Nieca river with a small bight between, and a little stream; the coast hills here are much lower and covered with bush.

Nieca River is open at high water, and at low water a spit of sand runs nearly across from the west side. The east head of the river rises to about 150 feet in height and is covered with bush.

About a mile beyond the Nieca river is another small river, eastward of which the shore becomes low, with a few low grassy hillocks near the beach.

Another small river empties itself into the sea northward of a low point, 2½ miles eastward of the Nieca river. On the west side of the mouth, near the river, is a small house visible from seaward. At the north-east point of entrance of the river is a black bushy peak 185 feet high, and the coast west of it being low renders it conspicuous.

About 7 miles west of Cove rock, and near the beach, there are three black hummocks with white sandy bases. Behind the westernmost of these and in a hollow on the first line of hills there is a large isolated tree which is conspicuous at 4 or 5 miles distance. About a mile west of this tree there is a remarkable sand-cliff. Except these marks there is a sameness in this part of the coast, sand-hills topped with brush being the prominent feature.

NKUTU RIVER.—Thence the coast continues eastward for 2 miles to Nkutu river; the shore between is sandy and fringed with rocks at low water, the coast hills are high and faced with sand, and midway the sand is nearly up to the summit of the ridge. To the S.E. of the river and a cable from the shore are some outlying rocks. A mile inland is a long bushy hill, 414 feet high, and near its eastern part half way down the face of it, is a white house which may be seen from sea. Nkutu river is generally open at high water. A sunken rock lies S.E. from its entrance, distant a third of a mile, and a quarter of a mile from the nearest shore.

Gola River.—At 2½ miles eastward of Nkutu river is the entrance of Gola river; the shore between is fringed with rocks, and the coast hills are covered with bush faced with sand, but they are not high; close to the back of this ridge are two bushy ridges extending nearly parallel to it, the inner one attaining a height of 280 feet, at the distance of a third of a mile inland. The coast hills are higher near Gola river; the hill at the west point of the river is about 120 feet high covered with bush, the sand extending up its face some distance, and a streak of sand runs up its south-west side to the summit, which may be seen several miles to the westward.

Gola river is open at high water; about a third of a mile south-east of the entrance is Gola point, from which the land rises precipitously 356 feet to a rounded top covered with grass; and inland two-thirds of a mile is a remarkable peak topped hill 443 feet high, also covered with grass, which is conspicuous from all directions. From Gola point the beach eastward is rocky, and the high part of the point drops rapidly to it, and the land continues low for about a mile, when the coast hills rise to a height of 180 feet. At 1¾ miles from the point is a small stream, off which is a sunken rock, bearing from its mouth S.W. ½ S. a third of a mile; from this stream the sandy beach curves outwards to Cove rock.

COVE ROCK 2½ miles from Gola point, is a blackish quoin-shaped rock, 86 feet high, and about a quarter of a mile long, with a deep notch in the middle; its highest part is near the east end, and it slopes to the westward. It is connected with the shore, from which it is about 3 cables distant, by a long broad neck of sand, and hence appears as an island, and a good mark for ascertaining a vessel's position, when running along shore. The sea dashes violently against the rock. On the west side of Cove rock are some outlying dangers ; the outer or western, bears from the highest part of the rock West, distant half a mile, and generally breaks; on the same bearing distant 3 cables is a low water rock, from which several rocks extend northward and eastward to the beach; S.W. by S. from the highest part of the rock and distant nearly 2 cables is a small rock, visible at low water springs.

The COAST from Cove rock eastward assumes a more pleasant aspect; bare sand-hills are now only occasionally met with, and they always have such remarkable forms as to make good landmarks. The land is also of a greener hue, more smooth, and has a gradual slope down to the water's edge. To the eastward of Cove rock the coast appears free from outlying dangers, and on a small sandy beach immediately to the northward of the rocks, boats may land even in S.E. winds.

From the small stream westward of Cove rock, the shore trends eastward to Hood point, with several small streams between, and is fringed with rocks. The coast hills immediately behind Cove rock are high and faced with sand, the highest part has two peaks on it, 278 feet high, and lies north of the rock, and in front of it a high sandy peak is conspicuous from seaward. Eastward of this range the coast hills are much lower for 1½ miles, where there is a high bushy topped hill between the mouths of two small streams, the hills then become low again, and in places the grassy slope reaches down to the beach. About 1¾ miles west of Hood point is a small hillock 79 feet high covered with grass.

Hood Point is low and rocky, but rises steeply from the beach to the top of a ridge over 200 feet high running to the north-west for 2 miles; this ridge is covered with grass and scattered bush to the western end, it drops precipitously on its south-west side, but gradually slopes eastward to Buffalo river. Hood point is tolerably clear of danger, but the bight on its west side appears shoal.

BUFFALO RIVER.—From Hood point the shore gradually turns to the E.N.E. for 1¼ miles to Castle point, the south-west point of entrance of Buffalo river; between these points the grassy slope comes close down to the beach, which is composed of rock and stones.

Castle point is low and rocky, and off it are several rocks and outlying dangers between the bearings of South and S.E. by E. ½ E. from the lighthouse, and at a distance of 1½ to 2 cables. The three north easternmost are called the Blinders, and have 2 fathoms on them at low water; the sea does not always break on them.*

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* *See* Admiralty plan:—Buffalo river, with views, No. 1,843; scale, *m* = 5·9 inches.

At 5½ cables S. by W. from the lighthouse, and 4 cables from the shore, is the east end of a rocky patch with 4½ fathoms water on it, and 5¼ fathoms inside it; the patch extends thence in a W.S.W. direction a quarter of a mile, and is about a cable wide; the sea breaks heavily on it in bad weather.

At the north-east point of the mouth of Buffalo river, is a bluff 150 feet high, covered with bush, and at its south-west extremity is a small sand hillock, from which a stone breakwater extends in a southerly direction about 160 yards. The breakwater is built apparently to protect the inner part of the river from S.E. gales, but it has caused a sand bank, which uncovers with the tide, to extend from its extremity nearly across to the south side of the river, thus narrowing the channel which runs close to the west wall to about 20 yards; the outer or southern part of this bank changes its form after heavy gales or rains.

The stern post of a wreck, with 6 feet water on it, at low springs, is close to the south-east edge or outer part of the bank, and N.E. ½ N. about 60 yards from the pier head on the south side of entrance.

The outer point of the southern sea wall is 70 yards north of the lighthouse on Castle point, the wall then extends N.W. ¾ W. 435 yards ; at the distance of 216 yards from the outer point is a break in the wall for about 65 yards, in which is a slip capable of taking up the surf boats for repairs, &c.

At the distance of about 4 cables up the river on the south bank, a stone pier commences and extends about 450 yards in a S.E. by S. direction, the outer end being nearly abreast of the inner end of the southern wall. Within or on the south-west side of this pier is a long strip of water where the surf boats are moored; it dries at low water. North of this pier and some distance above it, the sand banks in the middle of the river reach nearly across to the opposite side; the channel runs down the north-east shore to Guigney river, then taking a southerly direction till it meets the upper pier, which it follows down in a S.E. direction, and on meeting the outer sand bank strikes over to the southern wall, along which it runs until it reaches the sea.

The form of the upper sand banks, as well as of the lower, and the course of the stream vary with the weather. Above the sand banks and two-thirds of a mile from its mouth, the river is a cable wide, and continues that breadth for nearly half a mile, when it narrows to 160 yards, keeping that breadth for more than a mile farther up to what is called Second creek, above which it is navigable for about a mile.

The banks of the river are steep and of considerable height, and above the ferry (which is two-thirds of a mile from the mouth of the river) are covered with bush on the north-east side, both sides attaining a height of about 200 feet.

EAST LONDON.—The town of East London stands on the south side of Buffalo river near the sea, and being on land about 60 feet high may be seen, with its lighthouse, belfry, flagstaffs, &c. from the offing. The village of Panmure is on the north side, a mile up the river. The total number of vessels that entered inwards in the year 1875 was 172, amounting to 85,855 tons; and the number of vessels that cleared outwards was 144, amounting to 71,550 tons. The value of the imports was 552,033*l.*, and that of the exports 131,800*l.*

LIGHT.—On the reef near the extremity of Castle point is a lighthouse, which exhibits at an elevation of 45 feet above high water, a *fixed* white light, which should be visible in clear weather from a distance of 12 miles. The base of the lighthouse is square, 12 feet high, and constructed of rubble masonry: the timber superstructure is in the form of a truncated pyramid, weather-boarded and painted in alternate red and white bands. Position, lat. 33° 1′ 45″ S., long. 27° 55′ E.

The Bar of Buffalo river commences nearly abreast of the outer Blinder in about 3 fathoms, and decreases in depth to 9 feet, abreast of the south pier head; when the most dangerous part is passed, the rocks outside the lighthouse afford a partial shelter to the bar. As the rollers set across the channel, the bar is dangerous even to surf boats. The depths on the bar alter considerably with the weather, and vary from 3 to 12 feet at low-water springs, the lesser depth being caused generally by a succession of S.E. winds, the greater by westerly winds. West and S.W. winds cause the heaviest sea on the bar; and after heavy gales from those quarters communication is stopped for several successive days.

The channel from the south pier head runs up along the southern wall at about 20 feet from the wall into the river, and varies from 6 to 4 feet in depth at low-water springs.

From the records of five consecutive years it appears that the bar is only passable, even in surf boats, for 18 days a month on an average, which gives only 216 working days in the year, supposing crews for surf boats can be obtained on Sundays.

Beacons.—On the southern point of the break in the wall is an old derrick, which, bearing N.W. by W. ¼ W. and in line with the outer end of the store on the upper part of the break, is the mark for crossing the bar; this mark is difficult to be seen by strangers, and the objects are too close to each other.

Landing.—Boats should never attempt to cross the bar, even in the finest weather, unless accompanied by some one having local knowledge. Should it, however, in case of an emergency be found necessary to attempt to cross the bar, the leading marks should be brought in line N.W. by W. ¼ W. (if the old derrick cannot be distinctly seen, keep the old store open north of the south pier head), and wait until the heaviest rollers have passed over the Blinders; then steer to pass close to the eastward of them, or within 50 yards, and when abreast of the south pier head, pull up the channel as close to the west wall as the oars will permit. Bear in mind, as the bar is crossed, that there is occasionally an eddy current setting nearly in the same direction as the rollers which consequently have a tendency to set the boat to the north-eastward; the ebb tide also sets in the same direction, when inside the bar.*

Landing is generally made by means of large decked surf boats of about 30 tons burthen, which haul backwards and forwards by a hawser running in rollers at the bow and stern; the inner end of the hawser is secured to the south wall, the outer to an anchor outside the bar in 6½ fathoms, from which a branch warp is laid, with its outer end in 7 fathoms, with the lighthouse bearing W. by N. distant nearly half a mile. From whence they are hauled alongside the shipping for loading or discharging. The current is so strong at times that it is impossible to tow boats.†

Signals for the Surf Boats.—A red flag with a white square in the centre hoisted at the port office flagstaff (nearest the lighthouse) signifies that the bar is passable.

The flag at half-mast denotes that the bar is dangerous.

When no flag is shown the bar is impassable.

Communication can be made with the port office by means of Marryat's signals.

Anchorage will be found in 11 or 12 fathoms, with Cove rock in line with Hood point bearing W. ¼ S., the lighthouse on Castle point N.W. by W. ½ W., and Kahoon point N.E. by E. ½ E. In the summer or south-east season, vessels should anchor farther to the eastward, so as in case of parting to have room to clear the dangers off Castle point.

The holding ground, consisting of stiff mud under a thin surface of sand, appears to be good. The anchorage, however, is much exposed, and vessels generally lie broadside to the sea, and consequently roll and strain a great deal. In 1861, two vessels, the *Elizabeth Mary* of about 300 tons, and the *Shrimp* of 45 tons, went down at their anchors with all hands, in consequence of lying in too shoal water. Vessels proposing to risk lying here in bad weather, should on no account be in less than 10 or 12 fathoms. The worst wind here is what is called a black south-easter. Vessels trading to this place should have good ground tackle of a comparatively heavy description.

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* *See* view on plan of Buffalo river.

† Extract from "London Shipping Gazette," 7th July 1875.—"There is but one boating company here with seven boats, and no ship as a rule gets more than one lighter per day, carrying from 15 to 30 tons; and at present there are eleven vessels in the roadstead, some of which have been twenty days without breaking bulk. Ballast is 10*s.* 6*d.* per ton, beef 6*d.* per pound, water 5*s.* per 50 gallons, and not of the best, labour 7*s.* 6*d.* per day, and other things in proportion; and owing to the great difficulty of communication with the shore, we are compelled to employ boatmen and pay them 30*s.* per boat, with food, &c., per day."

East London, May 20th, 1875. (*Signed by*) *Twelve Shipmasters.*

The holding ground is good, and said to be free from rocks. When ships have gone adrift it has been from parting, and not from dragging. Lost anchors are rarely recovered, owing to the shifting nature of the bottom in gales.*

Winds and Weather.—Winds from south to south-west, accompanied with drizzling rain, are most to be dreaded at this anchorage. The barometer stands at 30·0 inches during the gale, and vessels unless they prefer the risk of riding it out would do well to put to sea in time, standing to the eastward and heaving to ; they would have no difficulty in regaining the anchorage without loss of time, as soon as the gale had subsided. During S.E. gales it is also advisable to put to sea in time notwithstanding the delay which may possibly take place in regaining the port after the gale has subsided.

In clear weather a north-wester is generally indicated by the barometer rapidly falling, and which blows hardest soon after the barometer begins to rise; the reverse is the case in gales from south to east.

During wet weather the barometer gives no warning of an approaching gale.

Rollers seldom set in during the summer months but they are frequent during the winter, the barometer generally standing two or three tenths above 30·0. The rollers along the shore, generally break out to a depth of 3 fathoms and in stormy weather to a depth of 5 fathoms. In very heavy gales it is stated that they break cut to a depth of 7 and even 8 fathoms, and on other parts of the coast they break occasionally in 10 fathoms.

Mr. Walker, who was harbour master here for 18 years, in 1868, states, that the S.E. wind is not the most dangerous, but that from the S.W. which sets in with drizzling rain and in squalls. The barometer does not fall much, but oscillates about one-tenth on either side of 30 inches. It is recommended that a vessel should weigh and stand to sea for the night should the wind draw to the westward of South with heavy greasy looking clouds in that quarter in preference to remaining at anchor during night; but this precaution does not apply to powerful steam vessels with steam fully up, so as to be able to get away at a moment's notice.

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* H.M.S. *Brisk*, 1861. *See* also, appendix page 461.

Tides.—It is high water, full and change, at the mouth of Buffalo river at 3h. 47m.; springs rise 5ft., neaps, 3¾ ft.

Currents.—At the anchorage off the mouth of Buffalo river the current generally runs to the westward at a rate of one to 2½ knots an hour. In calm weather it occasionally runs to the eastward at the rate of half a knot and sometimes stronger.

In shore near the edge of the breakers an eddy current frequently runs to the eastward, this current is variable in its strength but seldom attains half a knot an hour.

In the offing at about 15 miles from the coast, the regular Agulhas current runs from 2 to 4 miles an hour.

Directions.—Vessels bound to Buffalo river from the westward generally call at Algoa bay; when practicable they should leave that port so as to make the anchorage at Buffalo mouth in daylight. The remarkable sand streak on the hill at the west point of Gola river, Cove rock appearing like an island with the sand hill immediately inshore of it, will indicate the approach of the vessel to Buffalo river, and on reaching Hood point, which should not be approached nearer than a mile, the lighthouse on Castle point and the town of East London will be visible. Vessels should keep at the distance of a mile from the shore, and in not less than 20 fathoms water, until the lighthouse bears North, then steer for the anchorage before described.

Except with a fair wind, sailing vessels should make for a position to the north-eastward of Buffalo river, bearing in mind that the current nearly always sets about W. by S. A remarkable sand hill 281 feet high, covered with bush, and partially faced with sand, with a sandy streak stretching up its west side to the summit, rises 2 miles to the north-east of Castle point lighthouse, and can be seen at a distance of several miles. *See* view on plan of Buffalo river. Vessels from the eastward would do well to obtain the latitude between cape Morgan and Buffalo river.

It has been suggested, in fine weather and Cove rock not visible before dark, that it would be better for a steam vessel to anchor off the coast in about 12 fathoms water, with steam up or nearly so, in preference to lying to for the night. H.M. ship *Penelope* was set 80 miles to windward against a strong south-west gale in 24 hours.*

The COAST from the east point of Buffalo river for nearly three-quarters of a mile, is fringed with a ledge of flat rocks, on which, above high water mark and about a quarter of a mile from the point, is a small flagstaff, behind which are the quarries whence the stone was obtained for the harbour works.

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* C. P. R. Forbes, Master, R.N., 1855.

A quarter of a mile beyond is a rocky point with several small outlying rocks off it, the outer one being nearly a cable from high-water line and shows at low-water-springs; from this point the shore continues rocky and curves to the small stream at the west part of a sandy bight, the grassy slope running down nearly to the beach. Thence to Inkyanza river is a long flat sandy beach; the mouth of the river is closed with sand, and off it are several small detached rocks, and some outlying breakers about 2 cables from the beach.

Between Inkyanza river and Kahoon point the coast is steep and formed of rugged cliffs 20 to 50 feet high, against which the sea breaks violently; about 4 cables westward of Kahoon point and three-quarters of a cable off shore, is a water-worn rock 15 feet above high water, and to the eastward of it a patch of rocks awash at high water extends off 1½ cables.

KAHOON POINT is a peculiar shaped bare cliff nearly perpendicular, 35 feet high, with a peak a little behind it 115 feet, and 3 cables westward land 210 feet high; from the foot of the cliffs large stones extend in a south-east direction for about a cable to low-water mark. About 65 yards seaward of the cliff is a small black rock 10 feet above high water. The breakers in ordinary weather extend 3 cables in a S.S.E. direction, and the point should always be given a wide berth.

The north-east corner of the barracks—on the top of the hill at East London—open of the low part of the bluff over the east point of Buffalo river bearing West, leads clear of the dangers off Kahoon point.

From Kahoon point the coast trends to the N.N.E. for about half a mile forming a small sandy bight, where it is said landing might be effected in case of emergency in westerly gales.

Kahoon River.—Two-thirds of a mile N.N.E. ¾ E. from Kahoon point is Kahoon river, which is generally open at high water, the tide running up about 3 miles. The west point of the river is formed by a black bushy peak 80 feet high, and partially faced with sand.

Danger point is 2 miles eastward of Kahoon river, and between them is a small stream called Gonega river; the beach is sandy and fringed with rocks at low water, the coast hills are high and faced with sand, the highest part, 210 feet above the sea, is behind Danger point, and the sand extends up to its summit.

DANGER POINT is low, sandy, and fringed with rocks. A dangerous reef which covers at first quarter flood lies 4 cables S.W. by S. from Danger point, and 2¼ miles E. ⅜ N. from Kahoon point; the lead gives but little warning on approaching the rock, there being 11 fathoms at 2 cables seaward of it.

From Danger point the shore trends to Gonubie point, a distance of 3½ miles; between the two points are two streams called Klakla river and the Ganindugs river. A mile east of Danger point, or at the first stream, the coast hills become much lower, ranging from 30 to 40 feet in height and continues so to Gonubie point. The beach between the points is fringed with rocks.

GONUBIE POINT.—From Gonubie point a ledge of rocks extends to the westward for about half a mile, and nearly parallel to the shore, at about 2 cables from it. At a mile west of Gonubie point the breakers extend in bad weather 3 cables from the shore, with very uneven bottom outside them. Gonubie point has a small grassy hummock near its extremity about 50 feet in height; from this point the shore turns sharply to the northward for half a mile to the mouth of Gonubie river, which is open at high water, the tide running up about 3 miles.

From Gonubie river the shore trends eastward for 2¾ miles to Kwelegha point; the coast hills between are higher and for a short way up their sea side are faced with sand; the beach is fringed with rocks. Two small streams discharge about 1½ miles from Gonubie river, and 2 miles eastward of that river is a remarkable dark bushy peak, 242 feet high, apparently inclining to the eastward; from its peculiar shape this is one of the most conspicuous objects in the neighbourhood.

KWELEGHA POINT is low and rocky, and half a mile to the northward of it is the mouth of Kwelegha river, which is only open at times. A mile east of this river is Bologha river, also open at times. A quarter of a mile from its mouth, on the south-west bank, is another remarkable black bushy hill, 237 feet high, and faced with sand a short way up its sea face. The east point of the river is rocky and 1½ miles from Kwelegha point.

REEF POINT.—From Bologha river the shore trends N.E. by E. for 2½ miles to Reef point; the beach is sandy and fringed with rocks, and about midway is a slight projection. Reef point has two horns composed of rocks at the back of which is a wide sandy beach, from which the coast hills rise abruptly to a height of 313 feet. A quarter of a mile S.E. from the west horn of the point is a ledge of rocks some of which appear at low water; the sea breaks full half a mile from the point, which should not be approached within a mile.

From Reef point the shore trends N.N.E. for 1¼ miles to the mouth of Kintza river, which is closed with sand. Thence it trends more to the eastward, and E.N.E. for 1¾ miles to Klefani river (also closed), a mile beyond which is Kwenugha river; a third of a mile westward of the latter river is a small rocky point with a rock lying off it a cable from the shore. Farther eastward is Naagh river, half a mile westward of which is a small patch of rocks extending from the beach at low water; the shore then continues in the same direction to cape Henderson.

Between Reef point and cape Henderson the shore recedes, forming a long deep bight; the coast hills are high and faced with sand some way up; immediately behind this part of the coast the land rises abruptly to a height of 350 to 400 feet, and is covered with grass and patches of bush.

From Kintza river to Naagh river the beach is sandy, with the two exceptions before mentioned. The west point of the latter river is formed of bare sand about 130 feet high, and is conspicuous, being the last sand of note for nearly 25 miles.

CAPE HENDERSON, E. by N. ½ N. 6¼ miles from Reef point, rises directly from the rocky beach to a height of 485 feet, and is covered with grass; the land is lower on both sides the cape, and to the westward recedes slightly towards Naagh river; the cape has a dark bluff looking appearance from seaward, which probably gave rise to its being called a cape.

From cape Henderson the shore trends eastward about 3 miles to Flat point, with several small indentations; at 1½ miles eastward of the cape is a small stream, the west head of which is 410 feet high. A third of a mile east of this river is a point the hill over which is 250 feet high. Off this point is a sunken rock on which the sea breaks in bad weather; it bears E. by S. ½ S. 1¾ miles from cape Henderson, and is a quarter of a mile from the nearest shore. About a mile east from the point is another small stream called Agaga river, here the shore becomes much lower, and a third of a mile farther on a small grassy hillock rises near the beach to a height of 166 feet.

FLAT POINT and the land eastward for nearly a mile is low and grassy, not more than 25 feet above the sea, but about half a mile inland a grassy ridge rises abruptly to a height of 356 feet.

At 1½ miles eastward of Flat point are two small streams, called the Umtwendwe and Nukwana rivers. To the eastwards of these streams the shore projects about a quarter of a mile, is much higher, and curves gradually to Ikuko or Double mouth river, a third of a mile westward of which the shore is 163 feet high and nearly perpendicular.

Ikuko or Double Mouth river.—The mouth of this river is generally open, and the tide runs up about 1½ miles at high water. At 6 cables eastward of Ikuko river and a cable from the shore are some outlying rocks.

From Ikuko river the shore trends east for nearly 2 miles to Sklagha river; between the two rivers the coast is irregular, and consists of perpendicular cliffs varying from 140 to 220 feet in height.

Sklagha River.—At Sklagha river the cliffs cease, and a small sandy beach commences and extends nearly to the west extreme of cape Morgan, between which and Sklagha river are several rocks at a distance of 3½ cables from the shore.

The highest rock is 2 feet above high water, and bears West 3½ cables from the west extreme of cape Morgan; the outer or south-western breaker of this patch bears from the same point West, 6 cables and 4 cables from the nearest part of the coast; in-shore of these are several other rocks, most of which show at low water. Outside of this patch are two detached breakers 2 cables apart; the western one which generally breaks is S.W. by W. ¾ W. 6½ cables from the west extreme of cape Morgan. The eastern one seldom breaks, and is S.W. ½ W. more than half a mile from the same point.

The west head of Kei river, open of the east extreme of cape Morgan, leads outside to the S.E. of the rocks; and the Kei Kop (a remarkable round-topped hill, about 5 miles inland of cape Morgan) in line with the mouth of Sklagha river N.N.E., leads to the westward.

From Sklagha river to the west extreme of cape Morgan, the coast hills rise steeply from the sandy beach, and are covered with bush. A short distance east of the river, and immediately behind the coast ridge, the high bushy hills commence, and rising steeply to the eastward forms the west part of the high head of cape Morgan.

CAPE MORGAN is a broad flat low point, rising abruptly to a height of 275 feet, at a quarter of a mile from the shore, and at a distance of half a mile inland to a height of 395 feet. It drops suddenly on its eastern side, and from seaward appears a remarkable flat-topped hill covered with bush and wears the same appearance both from north-east and south-west.

At 3½ miles S. by E. ¾ E. from cape Morgan there is a rocky bank about 1½ miles square, with 22 fathoms on its shoalest part; inshore of it is a depth of 29 fathoms, and outside it 30 fathoms.

From the west to the east extreme of cape Morgan, the coast line is rocky and nearly straight; it then turns to the north-east for three-quarters of a mile to Ikwili river, the mouth of which is choked with rocks and sand; and then eastward to Kei river, the beach being fringed with rocky ledges, the latter extending a cable from high water mark. A small stream discharges itself half a mile east of Ikwili river.

The coast hills are at first low, but increase in height near the small stream, the west head of which is 101 feet high. From the east side of this stream, which is lower, the hills begin to rise again to the west head of Kei river.

KEI RIVER.—The entrance to this river is N.E. ¾ E. 1¾ miles from the east extreme of cape Morgan On the south-west side of entrance is a dark bushy hill 190 feet high, rising almost directly from the beach; from the foot of this hill a long spit of sand extends in an N.E. by N. direction, to within about 85 yards of the base of another dark bluff hill on the north-east side of the river, between which the stream flows, and the channel is about 25 yards wide at low water.

From the dark bluff at the north-east side of entrance, the shore trends in a south-east direction 4 cables, forming a small bight and terminating in a low ledge of sunken rocks. The channel into the river is between these rocks and the breakers on the bar, which are 30 or 40 yards only to the southward.

Inside its narrow entrance, Kei river opens to a width of a third of a mile, and near the mouth are two sand banks which dry at low water; the river runs first 1½ miles to the N.N.W., for which distance the west bank is low; it then turns to the N.N.E. for 2½ miles, the land on the west bank being about 500 feet high and nearly perpendicular; the east bank rises gradually for about 1½ miles above the first bend, and then becomes perpendicular and about 500 feet in height; the stream then turns to the north-west and west for 2 miles, and narrows to about 250 yards.

In this upper bend the left bank rises nearly perpendicular to a height of 825 feet; and its right bank to a height of 865 feet, terminating in a round-topped hill called the Kei Kop, and may be seen from most directions, being the highest hill in the neighbourhood. The river then runs southerly about three-quarters of a mile, and turning sharp round a long flat point, runs in a N.N.W. direction. At 1½ miles beyond this last point is the head of the tidal water, and where at times it is shallow enough to wade across, but being full of rocks is dangerous. The waggon drift is about 20 miles farther up the river. There are numerous streams running into the river on both sides.

Bar.—From the north extreme of the sand spit, which partly forms the river's mouth, the breakers extend seaward, in a S.E. direction, nearly a mile. These breakers are caused by a bank, formed by a deposit of sand from the river, which the tide does not carry away. The least depth in the channel may be 6 or 7 feet at low water, at the distance of about 30 yards from the rocky point which projects southward, midway between the outer point and the mouth of the river; but the sand-banks and channels cannot be depended on, as they alter after heavy gales or rain; in the latter case the river water rushes out with great force, reaching beyond the Snag rocks before the shore current has power to turn it to the westward. Therefore, in consequence of the channels shifting and the depths varying, strangers should not attempt to enter Kei river.

Directions.—From the anchorage a remarkable sand patch is seen on the face of the dark hill on the north shore of the entrance to the river. This serves as a guide to the entrance, as the low ledge of sunken rocks above mentioned is nearly in line with it, and it is from this point the river must be entered. If attempting to enter the river in case of necessity, a fair opportunity must be waited for, keeping a good look-out on the rocky ledge, over which the sea breaks furiously; and, when a favourable chance offers, pull in, keeping the rocky shore so close as to leave just sufficient room for the oars. The breakers on the bar extend to the rocks only during heavy rollers, when, of course, the channel is impracticable.*

Landing Outside.—If landing is decided upon, and the bar prove impassable, it may be effected more conveniently than on any other part of the adjacent coast at a sandy spit, which is sheltered in some degree by a patch of sunken rocks to the southward of it. These rocks lie about a cable off shore at rather more than three-quarters of a mile to the southward of the outer entrance of the river Kei, and the sea breaks violently over them.*

During flood tide the stream sets to the north-eastward close in shore, and to the south-westward during the ebb. Care must be taken, in landing on the spit, that, while waiting for a smooth, the boat be not swept too far to the north-east, for it was found on one occasion, when a whale boat of H.M.S. *Geyser* was swamped in endeavouring to pass through the surf, that the boat was not thrown on the spit by the rollers, but carried to the north-eastward by the flood tide into the breakers on the bar, thence into the river, through the channel, and was not recovered until twelve hours afterwards. On the other hand, during the ebb tide, equal care is necessary that the boat be not drifted to the south-westward, where the surf is so much heavier and the beach rocky.*

SNAG ROCKS.—This group of rocks lie about half a mile off the mouth of Kei river, three of them being visible at high water. The outer or south-west rock is about half a cable long in an east and west direction, but only a few feet broad; at its south-west end it is 10 feet above high water, and rendered conspicuous by a singular water-worn appearance, somewhat like the inverted roots of a large tree. This part lies E. by N. ¾ N. distant 1⅓ miles from the east extreme of cape Morgan, S. by E., rather more than half a mile from the higher part of the hill on the west side of the river, and S.W. 8 cables from the eastern rocky point of the river.

The two other dry rocks are to the northward and eastward of the above, extending in an east and west direction, and are 2 to 3 feet above high water; the west end of the western lies N. by E. a cable, and the east end of the other N.E. by E. nearly 2 cables from the high rock.

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* F. Skead, Master, R.N., 1858.

Eastward of the high rock, are two small rocks which show at low-water springs, bearing from it highest part E. ½ N. a cable, and E. by N. 2 cables; a sunken rock lies E. by N. 3½ cables from the same point; the rocks then extend to the N.E., the eastern sunken danger bearing N.E. by E. half a mile nearly from the high rock; from these last two sunken rocks several rocks extend to the northward, the inner one lying half a mile N.E. ¾ N. from the highest rock; most are visible at low-water springs.

The sea breaks heavily all round the Snag rocks, and in bad weather the breakers extend nearly a quarter of a mile outside of them. At a distance of 4 cables outside the rocks the depth is 17 fathoms.

Anchorage.—The *Geyser* anchored off the river in 9½ fathoms, with cape Morgan W. by S. ¾ S., Snag rock West, and Sandy patch at river's entrance N. ¾ W.

Tides.—It is high water at the Kei river, full and change, at about 4h. 0m.; springs rise about 5 feet.

Current.—At nearly a mile from the shore, in the neighbourhood of the Kei, the current was found invariably setting to the south-west, at the mean rate of 1½ knots. At first quarter ebb the stream from the river reached as far to the south-east as the anchorage, where it joined the coast current and both ran to the south-west together. During flood tide the influence of the stream was not sufficient to alter the general direction of the ship's head.

COAST.—The only sand hills for a hundred miles eastward of the Kei are the sand bluff at Sandy point, and a similar one 18 miles farther east. The coast between the Kei and these sand-hills is covered with grass and bushes down to the beach.

Koko river is half a mile eastward of Kei river, and its mouth is generally closed at low water; a little farther on is a small sandy point with a bushy hillock 60 feet high near its extremity, and a quarter of a mile west of the hillock is a small stream. The beach from Kei river eastward is fringed with rocks, and with the exception of a dark bushy hill 110 feet high, on the east side of Koko river, the shore is low and grassy. To the N.E. of the point is a small bight in which is a rock about half a cable from the beach, and at half a mile from the point is a small stream with a green hummock on its eastern point 85 feet high. The shore thence falls back to the entrance of Kologha river.

At 4 cables S. by W. ¾ W. from the west point of this river is a sunken rock, and a cable west of the rock is the east end of a ledge which uncovers at low water and runs to the south-west nearly parallel to the shore for half a mile. To the eastward of the above rock are two others, bearing respectively from the west point of Kologha river S.S.E. ½ E. 2 cables, and East nearly a third of a mile.

The shore from one mile south-west of Kologha river to 4 miles north-east of it is grassy, and covered with small hillocks about 10 feet above the ground formed of ant hills over which has grown small bush, and when 4 or 5 miles distant are a conspicuous feature of this part of the coast.

Kologha River is open at high water, and the channel in is close to the south-west point; a sand spit runs from the north-east point nearly over to the south-west point. The distance between the points is one third of a mile.

The east hill at entrance of Kologha river is covered with dark bush and is about 150 feet high; the shore thence trends E. by S. 2 miles to Mound point; the beach between is rocky and three small streams empty themselves. The land gradually rises from the beach, and at a quarter of a mile from it attains a height of 220 feet, and covered with grass.

Mound Point has a small grassy hummock near its extremity, about 40 feet high; at the back the land is uneven and rises to a height of 240 feet, at a distance of half a mile inland.

About $1\frac{6}{10}$ miles eastward of this point is Kobinnāba river; the beach between is fringed with rocks, and a quarter of a mile S.W. ¾ W. from the west point of the river, is a sunken rock on which the sea generally breaks.

Kobinnāba River is always open, and the tide runs up some 3 miles, where there is a ford. The east point of the river has a small grassy hummock on it about 20 feet high, and off the extremity of the point which is rocky, is a small rock visible at low water. About three-quarters of a mile beyond the river is the point of the same name, the shore between forming a small sandy bight. On the point above high water mark is a remarkable square rock, and off the west part of this point are several rocks visible at low water. Within the point a hill rises almost immediately to 302 feet high, gradually sloping to the mouth of Nxaxa river; the top and east part of the hill is covered with grass and bush.

Nxaxa River.—From Kobinnāba point the shore trends E. by N. ½ N. 1½ miles to Nxaxa river, the mouth of which is generally open; the beach between is rocky. The west point of Nxaxa river is low, and a stony reef runs off it a cable in an easterly direction, close to which is the narrow channel into the river. The east point of the river is a small sand hill covered with bush, and from it a long broad spit of sand stretches over to within a short distance of the west side, bounding the course of the river.

Inside this spit is a large basin of water at high tide, but at low tide the space is filled with sand banks.

From Nxaxa river the shore curves a little inwards, and at 1¼ miles farther on is Sandy point, the sandy beach between is nearly 2 cables in breadth from high to low water mark. The coast hills which rise precipitously from the beach form a conspicuous ridge covered with dark bush, and faced with sand to some height, extending from Nxaxa river to about half a mile past the point, on which are four distinct peaks; the third from the westward, which is a third of a mile inland from the point, is the highest, being 281 feet above the sea.

SANDY POINT.—On Sandy point is a small sand hill 75 feet high covered with bush, and from it a long stony point extends off nearly a cable. The hill is connected with the ridge behind by a high neck of sand.

Another authority says:—Sandy point is low, and remarkable from having upon it three or four hummocks, and about a mile inland two large trees; also from arches formed by the sand near the cliffs, with dark bushes near the centre.

From the point the shore curves to the north-east for two-thirds of a mile to a point, a little west of which, the ridge just mentioned terminates. This latter point is 30 feet high, and thence the shore trends northward half a mile, where two small streams empty themselves. The south-west hill of the western is 180 feet high, covered with bush and partially faced with sand; along this part of the coast the beach is sandy, but eastward it is sandy with small outlying rocks close in.

At 1½ miles eastward of these streams is a small projection, on the east side of which another small stream empties itself; and three-quarters of a mile farther on is the entrance of Umfāni river.

Umfani River is open at high water; there are two small bushy-topped hillocks on the south-west side of this river. A third of a mile farther eastward is the mouth of Istamfoona river, which is also open at high water.

Between these rivers is a small rocky point, at the back of which, and forming a head land common to both rivers, is a remarkable black bushy peak, 255 feet in height, appearing in some directions as a double peak; sand extends up its sea face about 40 feet. Off the point is a sunken rock, which frequently breaks; it bears S.S.E. ¾ E. 3 cables from the mouth of Umfāni river, and S.W. 4 cables from Istamfoona river.

A quarter of a mile eastward of the latter river is a low rocky point off which are some outlying rocks, a cable from the shore; the beach is broad and sandy. The shore then gradually turns E.N.E. to Stony point. The coast hills rise abruptly from the shore, and are faced with sand, the tops being covered with bush. The highest is about midway between the last river and the point, and is 114 feet high; the beach is fringed with outlying rocks, and off the highest part of the coast hills they extend a cable from the shore.

STONY POINT is low, and off it are some outlying rocks, a cable from the shore, in an E.S.E. direction; about half a cable distant in the same direction, is a remarkable square rock 6 feet above high water.

Two patches of breakers lie southward of Stony point, the outer is 1¼ cables long, in an east and west direction, and seems to have two shallow parts, the extremes of it bears from the point S. ½ W. half a mile, and S.S.W. nearly the same distance. The inner patch is S.S.W. ½ W. 6 cables from the point.

At two-thirds of a mile N.E. by N. of Stony point is the river Umtilwāne, the mouth of which is nearly closed, and half a mile beyond is the mouth of the Manubie; the shore between is low with a rocky beach, and skirted at a short distance with outlying rocks. On the west side of the Umtilwāne is a singular sharp black head 155 feet high; the east side is low. The coast hills south-west of Manubie river are covered with bush, and are not more than 30 to 50 feet high.

Manubie River is open at high water, and has a long spit of sand running nearly across its mouth, the channel being on its west side. At the west point of entrance the land is 95 feet high, and covered with bush; the east point is low, being the extremity of a long ridge of beach hills which extend to the eastward and rise abruptly from the beach.

Off a point 4 cables eastward of the Manubie, are several outlying rocks about a cable from the shore. At the back of the point is the highest peak of the ridge just mentioned, the whole of which is covered with bush; behind this again is a long hollow extending east and west, and at half a mile from the front ridge another ridge rises to a height of 250 feet, covered with open bush.

About 1½ miles eastward of the Manubie is the mouth of the Kleena, which is open at high water, and farther on is Mazeppa point; the shore between is rocky and sandy beach fringed with rocks. The east side of a point half a mile west of Mazeppa point, is fringed with outlying rocks near the shore.

MAZEPPA POINT.—Off this point is a small grassy peaked islet, about 26 feet high, and separated from the shore by a small rocky passage 8 or 10 yards wide, in which there is a depth of 2 or 3 feet at low water; the coast inside the islet is about 50 feet high, and 200 yards inland the land rises abruptly to about 190 feet above the sea; the highest and most western part is grassy, but behind it is bushy. Outside

Mazeppa point there appears to be no outlying dangers, but the sea breaks off it a considerable distance in bad weather.

A quarter of a mile to the N.N.E. of Mazeppa point is a bluff point with a low water rock off it, about a third of a cable from low water mark. Thence the shore curves gradually to the northward, forming a bay to Nebbelelli river, which is two-thirds of a mile from the latter point; for a third of a mile the shore is steep, the land covered with grass, rising nearly perpendicular to a height of 90 feet. About half way between the point and the river a small stream discharges, off and to the eastward of which are several outlying rocks.

Off the mouth of the Nebbelelli river, which is open at high water, is a large patch of rocks, which show at low water, lying a cable from the beach. Between the stream and the river the coast is from 40 to 60 feet high, rising to a height of 158 feet, 400 yards from the shore.

The east point of Nebbelelli river is rocky, and at low water extends to the rocks off the river's mouth. At this point a sandy beach commences, and continues for about a quarter of a mile, when the shore becomes rocky again. At the back of this sandy beach, a high and conspicuous sand hill rises 190 feet high, and its western slope forms the east point of the river; the sand extends up to its summit on the sea side, and the top and western slope is covered with dark bush. The shore thence becomes low, and continues eastward to a small point, on which is a grassy hummock about 20 feet high.

Mazeppa Bay.*—The indentation on the north-east side of Mazeppa point is known as Mazeppa bay, where small vessels have landed cargoes in very fine weather. In bad weather rollers set in right across the bight, and render it unsafe. A path runs from the western side of this bay up the ridge, through the Manubie forest, and continues up the ridges to the Natal road, about 30 miles from the coast, joining it a few miles east of the Butterworth mission station.

Kogha River.—Beyond the grassy hummock, the shore is rocky, and recedes slightly for half a mile to Kogha river, which is always open; a sand spit runs nearly across its mouth from the west point, the land over which is 150 feet high, and covered with bush. The east point is also bushy, 87 feet high, and from its base a long rocky point extends to the south-west, off the extremity of which, distant about half a cable, is a low water rock.

The tide runs up Kogha river 4 or 5 miles, and its banks are high, and in many parts perpendicular. On its right bank, about 3 miles from its mouth, a thick bush commences, and extends about 2½ miles to the north-west, nearly parallel to the river, and about a mile in width; it is dense, and called the Manubie forest. Buffaloes are said to be numerous in this bush.

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* *See* Appendix, page 462.

At two-thirds of a mile eastward of Kogha river is a low rocky point; a small bight is formed between, across which are several low water rocks. About 2 cables W.S.W. from the point, and 1¼ cables off shore is a horse-shoe shaped ledge, the highest part of which is 3 feet above high water. A sunken rock lies E.S.E. 1¼ cables from the point. The shore here is low and grassy.

Juju River is three-quarters of a mile eastward of the last point the coast forming a small bight between, in which are several rocks lying near the shore; a small stream runs into the sea at the head of the bight. On the east side of the stream is a small grassy hill about 50 feet high, thence the land slopes gradually down to the beach, which is fringed with rocks to the river.

Juju river is generally open at its mouth; its west point is low and rocky. On the north-east bank of the river, a short distance from the mouth, is a dark bushy head about 90 feet high, and from its base a sand spit runs nearly across to the south-western shore at low water, leaving only a narrow channel. From the bushy head the shore runs out to the eastern point, which is low and rocky; for half a mile eastward the shore forms a small bight with a rivulet at its head. The beach is fringed with rocks; and at the back the land is low and grassy, with a gradual slope. On the east side of the bight a bushy head rises from the beach, with three peaks on it, about 80 feet in height.

At half a mile farther on is a small river which is open at high water; and about half way between, and 1¼ cables off shore, are several outlying rocks. The west point of the river has a small green hummock 15 feet high on its extremity, outside of which is an outlying rock, S. by W. distant half a cable. A short distance inside the hummock is a bushy head about 60 feet in height.

From the east point of the river, which is covered with bush, and about 80 feet high, the shore trends E. by N. 1⅓ miles to Shekleen river, with low sandy hillocks, covered with bush, rising directly from the sandy beach. At the distance of two-thirds of a mile along the beach, and three-quarters of a cable from the shore, is a low sunken rock, from which to the next river are several small outlying rocks. The land rises to a height of 200 feet at half a mile inland.

Shekleen River is generally open, the channel running out close to the base of a remarkable green peak, 120 feet high, which drops perpendicularly on the west side of the river. The east side is low, with a long sandy beach in front of it. The shore then trends eastward a mile to Shekleen point, and a little more than half way, is a small black head from which the land rises abruptly to a height of 275 feet; a low rocky point projects three-quarters of a cable, and east of it is a small rivulet.

SHEKLEEN POINT projects some distance at ow water; at high water the sea washes the foot of the small dark bushy head which forms the point. It is about 50 feet high, and connected with the coast ridge by a low neck of sand and bush, and when near the coast north-east or south-west of it appears as a small islet.

At 1½ miles to the north-east is a small stream called Gnābie; the beach between is rocky, with three small streams. The land rises immediately from the beach to a considerable height, and is covered with grass and bush. About 2½ miles inland from the mouth of Gnābie river is a remarkable tree on a small mound, conspicuous when seen from a vessel 5 or 6 miles from the coast.

Kunduluana river is a third of a mile farther on, and between is a small rocky point; at another third of a mile to the north-east is Kawka river; the land between rises steeply to a height of 150 feet with a small bushy hill in front, the sea face of which is sand about 30 feet high.

At 1⅔ miles beyond the Kawka is the Gnabbākka river; the coast between is fringed with rocks, and a low ridge of bushy hills rise immediately from the beach, the land at the back of which is covered with grass and bush, and is 250 feet high at a distance of half a mile inland.

About 1¼ miles north-east of Kawka river, a small stream empties itself, and a third of a mile farther on, and half a mile south-west of Gnabbākka river, is a small rocky point, at the back of which the bushy hillocks are faced with sand for 100 or 135 yards in length, and about 40 feet in height; the bushes extend down the middle of the sand nearly to the bottom, making it appear when some distance from the shore as two small sandy peaks which can be seen 8 or 10 miles off. This is the only sand which shows from any distance between Mazeppa bay and Bashee river.

Gnabbakka River has a wide entrance; the west point is low from which a sandy beach stretches across towards the east point and into the river; the mouth is common to two rivers; the eastern is the larger and the tide runs up it about 5 miles. The east point is high, grassy, and nearly perpendicular. Thence to Gnabbākka point the coast is nearly straight and rocky, the land attaining a height of from 200 to 300 feet at a distance of a third of a mile from the beach, and broken by several ravines.

Ingoma river is a small stream, and about 1½ miles to the north-east of Gnabbākka point; half a mile farther eastward is Kabolla river; between the two rivers is a long rocky point, and the coast is about 170 feet high.

From Kabolla river the coast, which is of high cliffs, turns to the south-east to Ūdwessa point, dark and bluff-looking; the cliffs are perpendicular, 160 feet high, from which the land rises to a grassy peak 310 feet above the sea; a short distance east of which and somewhat higher is a dark bushy hill.

From Ūdwessa point (half a mile east of which the cliffs cease), to the next point eastward is nine-tenths of a mile; on the west side of this latter point is a small bight, and at the extremity of the point is a small bushy hillock 32 feet high. Thence to Amendu point is nine-tenths of a mile, and between is a small stream and the mouth of Amendu river; the shore is fringed with rocks, and off the stream a small ledge of rocks projects some distance from the beach; thence to the river the beach is sandy.

Amendu Point is a long rocky projection, off which are several outlying rocks. A sunken rock lies a cable E.S.E. from the outer low-water rock. On the point is a small bushy hillock 25 feet high, and a quarter of a mile inland on the east side of Amendu river, is a hill 115 feet high, covered with grass and bush. Between these two hillocks the sand from the beach west of the point extends over to the stony beach on the east side of it. The Amendu river, after taking a sudden turn not far from the point, follows the shore along about 1½ cables, and forces its way to the sea through a sandy spit, which runs across from the east point.

Between Amendu point and the Bashee river, the shore forms a bight, and is stony with a small sandy beach, from which the coast hills covered with bush rise about 60 feet high, backed a third of a mile in by land about 180 feet above the sea. Between are two streams, the first named Ūmandwana river.

BASHEE RIVER.[*]—The entrance to this river is about a third of a mile wide. The west point is low and grassy, but about a quarter of a mile up the river on the right bank is a grassy hill 270 feet high. The hill on the east side of entrance is high and covered with bush, from the base of which a long and broad sand spit extends to within a cable of the west side of the channel.

Inside the entrance are three sand banks, which show at low water. The channel is close along the west shore, between it and the sand banks. Above the sand banks the river expands to a fine sheet of water, running nearly straight for 2 miles in a N. by W. direction, with an average breadth of 1½ cables. The banks of the river are steep, and on the west side are generally free from bush, but on the east side, from half a mile within the entrance, are covered with dense bush. Hippopotami abound in the river.[†]

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[*] *See* also Appendix, page 462.

[†] *See* Admiralty chart:—Bashee river to Untamvuna river, No. 2,087; scale, $m = 0{\cdot}29$ inches.

About 1¼ miles up the river, and half a mile from the right bank, a dense forest called Ūdwessa commences, and extends in a westerly direction for about 5 miles, is about 1¼ miles in width, and at an average distance of a mile from the coast. Buffaloes and tigers are said to abound in this forest.

The sea breaks about 2 cables outside the entrance, but the bottom appears to be free from sunken rocks, and at high water in fine weather, the river might be entered by a vessel of light draught.

BASHEE POINT.—From Bashee river a sandy shore curves slightly to Bashee point, 1⅛ miles distant. The high part of the point is bushy, and on the outer part is a small grassy hummock. A rock lies a short distance off the point. From the westward, a sandy streak on the west side of a bushy hill, near the east side of entrance to the river, is visible.

Commander Gordon, R.N., in 1859, writes:—Bashee point, to the southward of the river of that name, has a ledge of rocks with a heavy surf upon them, extending about a quarter of a mile. A little to the eastward of Bashee point there is fair anchorage. Landing might be effected under, and to the eastward of the point.*

Caution.—The coast between the Bashee and Umcomass rivers is fringed with outlying rocks for a distance varying from one to 5 cables from the shore.

Current.—The current known as the Agulhas generally sets about W. by S. or nearly in the direction of the coast at the rate of one to 3½ knots an hour; it is weak in strength near the coast, and strongest near the edge of the bank of soundings. Within a distance of about 2 miles from the coast a weak current sometimes sets to the eastward in calm weather; this easterly set has occasionally been known to extend some 7 or 8 miles off the coast. Close to the shore an eddy current very often runs slowly to the eastward.

HOLE in the WALL.—In lat. about 32° 2′ 30″ S., long. 29° 6′ 45″ E., are two remarkable rocks about 100 feet high. The south-western is partly flat-topped, and perforated at the base; the north-eastern and higher of the two has a cleft in the summit in the form of a wedge, the south-west portion is rugged, the north-east portion has a smooth top and slopes to the north-east.

Whichelo Bank.—Abreast of Hole in the Wall, and about 75 miles from land, a bank of soundings of from 42 to 48 fathoms, in lat. about 32° 40′ S., and long. from 30° 10′ E. to 30° 45′ E., is said to have been discovered by Captain Whichelo, in October 1847. This bank, if existing, is separated from the coast soundings, as no bottom at 125 fathoms, is noted on the chart at about 10 miles from land. The soundings off the coast in the vicinity of Hole in the Wall and St. John river appear to be deeper than on any other part of the coast.

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* The point alluded to southward of the river is evidently Amendu point of the present Admiralty charts, Bashee point being *north-east* of the river.

Captains Denham of H.M.S. *Herald*, and Pullen of H.M.S. *Cyclops*, endeavoured to determine the correctness and position of this bank in 1861, but were prevented from so doing by severe gales.

Whale Rock is noted on the chart close to a prominent point between Hole in the Wall and Rame head, but we have no information about it.

RAME HEAD, in about lat. 31° 48′ 30″ S., long 29° 21′ 15″ E., is a bold rocky point, sloping gradually, with a small rock at its extremity. At about three-quarters of a mile off shore, a little to the westward of the head, the water is shallow with from 8 to 10 fathoms.

Between Rame head and Waterfall bluff, about 33 miles to the eastward, the coast is faced with a number of high bluffs, which does not occur on any other part of the coast east or west for a long distance.

Brazen Head, about 5 miles to the north-east of Rame head has from the eastward the appearance of two distinct points densely wooded and steep. The land is high between Rame and Brazen heads.

GORDON BAY is an indentation in the coast to the eastward of cape Hermes, and at the mouth of St. John river, with good anchorage and gradual decrease of soundings, but it is exposed from about E. by N. round by south to W. by N.*

Cape Hermes, the south extreme of Gordon bay, is distinguished by a round, grass-covered hill, 433 feet above the sea, and is in lat. 31° 38′ 6″ S., long. 29° 33′ 16″ E.; the north extreme of the bay has a similar hill over it, but neither so large nor so high as the other. The depth of the bay, westward of a line joining these hills, is scarcely half a mile.

At a cable off cape Hermes is a detached rock 8 feet above the sea; the shore for a third of a mile to the N. by W. of the cape is rocky, when a sandy beach runs to the north-east for nearly 6½ cables, terminating in a spit at about a cable within the entrance of the river. At the junction of this rocky and sandy beach there is a small nook, called Pauls cove, where the boats of H.M.S. *Hermes* effected a landing, when the bar of the river seemed impracticable, from the heavy surf upon it.

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* The region round St. John river between Kaffraria and Natal, and forming part of the district known as Pondolond, has been annexed to the Cape Colony. On the 13th August 1878, the British flag was hoisted, and the sovereignty over the port and tidal estuary of St. John river was declared to be vested solely in Her Majesty's Government.

The anchorage in 13 fathoms water, with cape Hermes N.W. by W. ½ W. distant three-quarters of a mile, and Porpoise rock N. by W. ½ W. 1¼ miles, was found to be good: but a closer berth would probably be better. With the rock off cape Hermes W.S.W. half a mile, and Porpoise rock N. by W. ½ W. 6 cables, in 8 fathoms, more shelter from the westward would be obtained. No current was experienced at the anchorage.

ST. JOHN or UMZIMVUBU RIVER.—The appearance of the land from off the mouth of this river is so remarkable that, having once seen it, or the sketch of it, is easily recognised again. A lofty table mountain, 1,200 feet high, appears to have been cleft to its base, leaving a wedge-shaped gap in the centre, through which the river flows to the sea. The upper part of this table land, called St. Johns Gates, is bare stratified sandstone rock, like Table mountain; but at 200 feet below a dense forest covers the cliffs to the water on the river banks. The Gates are 1¾ miles from the entrance of the river; the western Gate, 1,239 feet high, is very steep; the eastern Gate, 1,163 feet high, has two distinct terraces of table-land with grass on it.* *See* view on plan of St. John river, No. 2,566.

At the east point of entrance to St. John river is a grassy hill, 59 feet high, called Porpoise rock, and presenting to the south-west a face of dark cliff, which is surrounded by a rocky reef. At a quarter of a mile eastward is Whites hill, 115 feet high, the base of which is also skirted by reefs. The narrowest and deepest part of the channel into the river (which can be plainly seen from the Porpoise rock) is between the Porpoise rock and the sandy bank extending from the western shore, and here its average breadth may be about half a cable.*

The Bar may commence about a quarter of a mile southward of the Porpoise rock, its probable breadth about a cable, and generally maintains a depth of about 8 feet at low water. On both sides of the channel there are often heavy breakers and at times the sea breaks across the entrance for four or five successive days, and especially after S.W. gales, when the rollers are unusually high. The bar is of quick sand, constantly shifting and in December the channel is to the eastward near the Porpoise rock, but as the dry season advances it moves to the westward until June or July. In June when the bed of the channel is to the westward there is less water over the bar than at other times of the year. The rainy season prevails from October to April.†

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* *See* Admiralty plan:—St. John or Umzimvubu river with view, No. 2,566; scale, m = 6·0 inches.

† In August 1878, there having been no heavy fall of rain for three years, the water was much reduced, and a steam vessel crossing the bar in entering about an hour before high water, and two days after new moon, carried only 6½ feet on the starboard side, and 7½ feet on the port side. Information on St. John river derived from a report by Lieutenant E. H. M. Davis, H.M.S. *Active*, 1878, received through Commodore F. W. Sullivan, C.B., C.M.G., Senior Officer.

During the unfavourable part of the year for vessels entering the river, it appears, even from the accounts of those who have frequently crossed the bar, that except during very boisterous weather the river is always practicable for surf boats, provided with the necessary warps and buoys. As it may be necessary to put the vessel's head to starboard after crossing the bar to avoid the spit on the port side and thus bringing her broadside to the sea, every precaution will be requisite. A surf boat and surf warps are employed in communicating with vessels outside the bar.

In the river near the entrance there are 6 and 7 fathoms water, occasionally 5 fathoms close to the banks, and 4 and 3 fathoms, 7 miles up: at this distance on the right bank is a trading station, and 3 miles farther up a waggon drift. There is plenty of good timber and abundance of limestone in the neighbourhood of the river. The direction of the river from its mouth inland is about N. ½ W., for more than 1½ miles, and the average width above a cliff on the western bank called the Needles 300 yards. This cliff rises N.W. by N. 3 cables from the Porpoise rock, and is 29 feet high.

Tides.—It is high water, full and change, at St. John river, at about 4h. 8m., and the rise is 5¼ feet.

Current.—Close inshore during the flood tide of the river, which runs regularly, a strong current was found setting to the S.S.W. along the sandy shore inside the breakers, and to seaward along the rocky shore in the direction of cape Hermes. This current should not be forgotten in attempting to land with a flood tide, for, upon one occasion, it was found so strong that a cutter could barely stem it.

Caution.—Should a boat be swamped in the surf, it would be almost impossible for the crew to reach the shore, and sharks are numerous and ravenous, both outside the surf and inside the river's mouth.

ST. JOHN REEF.—At about 2 miles eastward of the entrance to St. John river is Bluff point, the coast hills between ranging from 165 to 374 feet above the sea, the latter height being just over west of the point. The shore is skirted with rocks which extend off in places more than a cable; and 2 cables from the shore on the east side of Bluff point—which is also rocky—is a reef with only 6 feet water on it at low springs, with deep water between it and the shore. From the reef cape Hermes bears W. ¾ S. distant 2$\frac{6}{10}$ miles. The steam ship *Bismarck* struck on this danger on the 29th December, 1871. Vessels should give Bluff point a wide berth.

The COAST eastward of the St. John reef continues high for about 16 miles to Waterfall bluff. This part of the coast is cut into a number of ravines, through which small rivers appear to empty themselves into the sea, but none of them can be mistaken for the St. John, as they are much smaller and generally with sloping banks, whereas the sides of the St. John are precipitous.

WATERFALL BLUFF is the easternmost of a succession of bluffs. It is about 200 feet high, and from its summit two large streams of water precipitate themselves into the sea: the westernmost fall enters the sea at one leap, but the fall of the eastern one is broken at about a third of the distance down.

These falls may be seen 7 or 8 miles off but in dry weather the volume of water is probably much diminished, if not entirely dried up.*

The COAST, eastward of Waterfall bluff, is moderately high inland, sloping gently down to the beach. In the wet season this coast appears beautiful, being clothed with bright green grass and clumps of trees and bushes, frequently relieved by streams and small cascades; but a few weeks of drought probably greatly alters the appearance.

There is a remarkable round topped sand hill in a ravine close to the water's edge 18 miles eastward of Waterfall bluff. This hill presents a sandy bluff to the westward, and another to the S.W., the top being covered with dark bushes.

Another sand bluff 17 miles farther eastward is somewhat similar, and exactly midway between these there is a remarkable red topped hill, which is in sight from both bluffs. Observe that there is nothing which can be called a sand hill or bluff for 90 miles on either side of the above-mentioned, or in fact to the north-east until reaching Natal. Between these sand bluffs and port Natal there is nothing remarkable by which the coast may be recognised, except a bluff 418 feet high, about 11 miles west of cape Natal.

Between the St. John and port Natal there appears to be a great number of small rivers about which we have no information.*

Current.—From the mouth of the river Umtwalume in lat. 30° 29′ S. to cape Natal, a north-easterly current of about 2 miles an hour has been experienced in the month of May, at from one to 2 miles from the shore; whilst on the coast to the south-west of the river it was exactly the reverse.

Soundings.—Between the parallels of about 30° 22′ and 30° 24½′, and 3½ miles from the shore, there are soundings of 10 to 14 fathoms in a N.E. by E. direction, being over a space of more than 2 miles. From the latter depth no bottom was obtained.†

ALIWAL SHOAL.‡ This dangerous rocky shoal, about a mile in length, and a third of a mile in breadth, in latitude 30° 15′ 45″ S., longitude 30° 49′ 45″ E.* is upwards of 2 miles from the shore, and in the track of vessels bound along the coast to and from port Natal. It has from 2 to 6 fathoms on it, and 11 to 15 fathoms close to all round, at low water. It lies parallel to the shore at 2¼ miles off Green point, which is green and grassy, and the nearest land to the shoal.

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* *See* Admiralty chart:—Umtamvuna river to Tugela river with view, No. 2,088; scale, m = 0·28 inches.

† Commander Gordon, R.N., 1859.

‡ The barque *Impulse* is reported to have struck, in July 1860, in lat. 30° 19′ S., long. 31° 12′ E. From the report of enquiry subsequently held, it appears that her distance from shore at 5 p.m., was *estimated* at 12 or 14 miles, and that her course in-

From the shoalest part of the Aliwal, cape Natal bluff bears N.E. ¾ E., the mouth of the Umcomass river N. ¾ E. distant 3¾ miles, and the mouth of the Bloody river W. by N. 3½ miles. The water is deep inside the shoal, 15 to 12 fathoms being obtained close in shore.†

Umcomass River has its mouth in latitude about 30° 12′ 15″ S., and longitude about 30° 48′ 30″ E. We have no information about it, or about Bloody river 5 miles south-west of it. Unless certain of the latitude, this part of the coast should not be approached without much caution on account of the Aliwal shoal.

CAPE NATAL.—From Green point, the shore trends about N.E. by E. ¼ E. nearly 27½ miles to cape Natal. About 11 miles westward of the cape is a bluff 418 feet high, and 4½ miles farther west, and 1¾ miles inland, is a hill 482 feet high, neither of which from a distance should be mistaken for the cape. Cape Natal is a high wooded tongue of land, terminating in a remarkable bluff 195 feet high, and is easily made out, the coast to the northward falling a little back and being low for several miles. At the foot of the bluff on its eastern side, flat rock 20 feet high and about 40 feet long projects seaward, and thence rocks which uncover at low water springs extend to the north-west towards the bar.

There are no outlying dangers in approaching the cape and the water is deep close to the land. On the bluff is a light tower in the form of a frustum of a cone, 81 feet high, and painted white, also a flag staff and watch house; and on its north-west side at the foot of the bluff are two white leading marks for the bar.‡

To the southward of the cape the coast is of moderate elevation near the sea, and broken in several places by the mouths of rivers and streams. The hills rise inland to a considerable height, and the landscape strikes the visitor who is familiar with the white sands and stunted brushwood of South Africa as one of great richness and fertility. To the northward of the cape, as before remarked, the coast is low and sandy, with bushes a few

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clined towards the shore until 7 p.m., the time of her striking. Now, considering that it must have been quite dark an hour before she took the ground, and also that the spot where she was supposed to have struck differs but 3½ miles in latitude from the position of the Aliwal, we infer that little doubt exists of her having struck on the Aliwal shoal, the outer part of which appears to be about 3 miles from the nearest shore.

* Surveys of Skead, 1859, and Archdeacon, 1872. † *See* view on chart No. 2,088.

‡ *See* Admiralty plan:—Port Natal with views, No. 643; scale, *m* = 5·8 inches.

yards from the beach, but the character of the country is very similar inland, although somewhat more thickly wooded than the coast to the southward. To the southward of Natal the soundings are coarse gray sand and stones, whilst to the northward fine black sand will be found.

LIGHT.—The tower on cape Natal exhibits at 282 feet above the level of the sea, a *revolving* white light attaining its greatest brilliancy every *minute*, and visible in clear weather from a distance of 24 miles. The light is not visible from the Aliwal shoal.

Position of lighthouse, lat. 29° 52′ 40″ S., long. 31° 3′ 50″ E.

Pilots.—Vessels intending to enter port Natal, and in want of pilots should anchor in the roads, in from 8½ to 10 fathoms, sandy bottom, with the lighthouse bearing about S.W. distant a mile. A signal being made, a pilot will be sent off from the port office, or, if the surf on the bar is too heavy, it will be communicated by signal from the flag staff on the cape. A steam tug may be obtained by application to the harbour master.

Anchorage.—The anchorage may safely be approached at night by the lead, the decrease of soundings being regular. A good berth will be found in 8½ to 10 fathoms, with the lighthouse bearing S.W. or S.W. ½ S. distant about a mile. The holding ground is good, but there is no shelter with southerly and easterly winds, and there is nearly always a heavy swell along this coast. In a more southerly position the outset of the tide is more felt, swinging vessels broadside to the swell, and causing them to roll heavily.*

H.M.S. *Southampton* drove and was very nearly wrecked here during a gale from E.S.E.; it is recommended that, when the wind is inclined to freshen from that quarter, with a long swell and high barometer, vessels should proceed to sea as soon as possible. If apprehensive of bad weather, a vessel may anchor in 16 fathoms, 2½ miles from the lighthouse, from which position she would be able to fetch out on one tack or the other, with the wind from any quarter.

DIRECTIONS.—The light on cape Natal not being visible from the Aliwal shoal, care must be taken in making for port Natal from the south-west, not to approach the shore nearer than 4 or 5 miles, or stand in to a less depth than 40 fathoms water, until assured of being northward of the Aliwal. In fine weather an early sight of the light may be obtained from aloft, when its bearing will indicate the approach to the land; when to the northward of the danger and the light is well made out from the deck, it may be brought to bear N.E. by E., which will lead outside all known dangers while to the south of Umlasi river (9½ miles from the lighthouse); but when to the *northward* of the Umlasi river the light must be brought to bear more to the northward, keeping a long mile from the land. When the lighthouse bears W.N.W. steer for the anchorage. From sea the masts of vessels in port will be visible when the north end of cape Natal bears southward of W. by N.

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* Caution.—H.M.S. *Tamar* anchored here on the 4th November, 1871, in a S.W. gale and thick weather; the following day was fine, and the gale subsided. The wind then shifted to the eastward and north-east, and increased gradually during the night. At 6 a.m. force of wind from 4 to 5, but it was absolutely necessary to leave the anchorage, owing to the heavy sea setting in. On another occasion the same weather attended the *Tamar*, and the vessel was obliged to put to sea; on this occasion a barque parted her cables and drove ashore. On the first indication of an easterly wind, too much precaution cannot be taken in sailing vessels to ensure an offing so as to be able to stand out on the port tack, as the shift of wind and the sea attending it are extremely dangerous. The *Tamar* anchored here in June, in a N.W. gale, and with little sea, but in the course of 6 hours a heavy swell set in, which rendered the bar almost impassable for the tug and caused the ship to roll 40 degrees. Therefore not a moment should be lost in making the best of fine weather. The month of June is considered preferable to November.

As the light on cape Natal is not visible from the Aliwal shoal, vessels bound to the south-west should steer so as to lose sight of the light on a N.E. bearing or more northerly.

The Bar of sand which crosses the mouth of the port is constantly changing both in direction and depth, and should never be attempted by a stranger. It is silted up by the swell of the ocean, and scoured out by the force of the ebb, which has been found sufficient to deepen the water 12 inches in one tide.

In 1860, the regular ship channel had silted up to only 6 or 8 feet at high water, but 12 feet could be carried through the northern channel, where boats usually came out. In May, 1875, there was a depth of 8 feet on the bar at low water, and the channel very narrow. In October, 1877, the bar was passable only at high water springs for vessels of 10 or 10½ feet draught, and the channel so narrow that a few yards either way was dangerous. All vessels over the above draught have to lighten outside. A breakwater has been constructed extending in an east-north-east direction from Sandy point, which by narrowing the channel is supposed to give greater force to the outgoing stream and so clear the sand. There is less water on the bar after southerly winds than at any other time in consequence of the sand being washed in; but westerly winds and rain deepens the bar. From June to the end of August is said to be the time when the bar is in its most uncertain state.

If, through any cause, a vessel whose draught will admit, should be forced to run over the bar without a pilot, keep the two white leading marks at the foot of the bluff on the west side in line, until the bar is crossed, when, being in smooth water, the vessel may anchor near the bluff marks and wait for a pilot. On the arrival of a vessel, it would be well to inquire the line of the channel with reference to the marks. Landing is probably best during the months of June to November inclusive.

PORT NATAL.—Having crossed the bar, the channel lies 100 yards or less along the bluff, until within the low sandy spit of Sandy point on the north side. Vessels lie in the northern part of the harbour under Sandy point, and within about 2 cables of the custom house, port office, wharfs, &c., and from whence a railway runs to Durban. The mail steamers generally lie in the Bluff channel. A good berth for a small vessel of war is to moor head and stern alongside the harbour pier, in about 12 feet, at low springs; but sand is blown on board during south-west winds. All vessels are compelled to take in or make fast to Government moorings.

A space within Sandy point extending about 3½ miles east and west, and nearly 2 miles north and south, is almost filled with mud, with boat channels in various directions. On the southern side are some large mangrove islands, and elsewhere around this space are mangroves and mangrove swamps. The part available for a harbour is confined to a narrow channel about a cable in breadth and about 1½ miles in length, with depths varying from 7 to 20 feet.

Durban, the town of this port, stands about 1½ miles from Sandy point, and is about 54 miles by road from Pietermaritzburg the capital of the colony. It is well laid out, with wide streets lined with trees. The houses are principally built of wood. Here there is an Episcopalian church and Wesleyan chapel, banks, mechanic's institute, several clubs and societies, a market place, &c. The population in 1878 may be about 8,000, the greater part whites.

The chief exports are wool, ivory, arrowroot, butter, ostrich feathers, flour, grain, gold dust and bars, hides, red ore, skins, raw sugar, cotton, pepper, coffee, rum, &c. The sugar-cane flourishes, and excellent sugar has been produced, as also the best quality of arrowroot, and rice, ginger, turmeric, chicory, coffee, and tobacco; of fruits—pine apples, mangoes, bananas, sour-sops, lemons, chillies, &c., thrive, as well as potatoes and all kinds of European vegetables, also corn and oats.

In the year 1875, 196 British and Foreign vessels amounting to 69,484 tons entered inwards; and 193 vessels amounting to 67,743 cleared outwards. In the same year the value of the imports of the colony was 1,268,838*l.*; and the exports 835,643*l.* There are apparently no fishing boats. The mail packet calls at port Natal from Table bay about once a month, thence to Delagoa bay, Inhambane, Quilimane, Mozambique, Zanzibar, and Aden, and *vice versâ.*

Supplies.—Water and provisions may be obtained, and are sent off in large boats to vessels lying in the roads outside the bar, but this is an expensive and tedious proceeding. In the harbour refreshments may be obtained at moderate prices.

Coal has been discovered in large quantities in many parts of the district, and for many years has been burnt in smithies and houses, but it is surface coal, and unfit for the furnaces of a steam vessel.

A Life-boat is kept at the port office on Sandy point, and the harbour master has a small steam-tug for the service of the port. The steamer is sent off to communicate with men-of-war on their arrival.

Tides.—In the port of Natal, abreast the custom house, the time of high water at full and change is 4h. 30m., the greatest rise is 6 feet. The velocity of the ebb at springs is about 3½ knots, and between Sandy point and the bar about 2 knots.

In the road, outside the bar, the stream of flood sets to the south-west and of ebb to the north-east.

Current.—It is necessary to caution vessels against the strong current which prevails on the coast of Natal, from 3 to 30 miles off the land. It is uncertain both in direction and force, but generally sets to the south-west at the rate of 2 knots.

Winds and Weather.—Most rain falls from October to February. In the dry months north-easterly winds prevail; at other times of the year westerly and S.S.W. winds.

It has been shown by simultaneous observations of pilots, that when the winds is S.E. at Algoa bay it is N.E. at Natal.

COAST.—Between cape Natal and the entrance to Tugelar river is N.E. by E. about 46 miles; the shore between falls back about 3 miles, and several small streams run into the sea. The coast hills range from 250 to 555 feet high, and backed by dense bush.

Morewood cove, about 23 miles north-eastward of Natal, is said to have a seam of coal in its vicinity, but we have no information about it.*

On the north side of entrance to Tugelar river is a red hill; the coast line thence is irregular and trends in an E. by N. northerly direction for 62 miles to cape St. Lucia.†

Durnford Point is a bluff point in about lat. 28° 56′ S. and long. 32° 0′ E., from whence a ridge of mountains takes its rise and striking directly to the westward, increases in height and magnitude as it advances into the interior. It then appears to run nearly parallel with the coast to the southward, extending a considerable distance. The mountains forming this ridge are from 3,000 to 6,000 feet high, and separate Natal from the surrounding districts. There is said to be only one pass through this range.

The coast hills in the vicinity of the point are of moderate height and even topped, and about 3 miles to the northward of the point is a bluff similar in appearance, with low sand hills between the two. O'Neill peak is dark, with a conical summit, and may be known by there being no dark hills within 5 miles to the southward of it.

The Soundings off the coast from cape Natal to the north-east as far as Tugelar river are from 25 to 35 fathoms, at 7 or 8 miles from the land; in lat. 29° 23′, long. 31° 40′, and about 13 miles from the coast there are 30 fathoms water, and although half way between this depth and the shore the water is deeper, there being 36 fathoms, yet the bottom here appears to be tolerably flat, as at 11 miles westward of the depth of 30 fathoms and 5 miles from the coast there are 28 fathoms. At 1¾ miles from the shore, in lat. 29° 31′, there are 27 fathoms.*

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* *See* Admiralty chart:—Tugelar river to Sordwana point with view, No. 2,089; scale, m = 0·23 inch.

† In August 1878, Commodore Sullivan of H.M. Ship *Active*, en route overland from Durban, to, and down the Tugelar river in a boat grounded repeatedly, proving the river useless for transport at this season.

The above depth of 36 fathoms is about 6½ miles south of Tugelar river, and at 2½ miles from the river it decreases to 10 fathoms; thence the coast to the north-east as far as lat. 28° 50′ is bordered by a bank with 10 to 17 fathoms on it, at 3 to 8 miles distant, and beyond it to cape St. Lucia, with 18 to 22 fathoms on it, at 2 to 4 miles from the shore.

The bank extends in places to about 20 miles from the coast, and the soundings increase to more than 60 fathoms. It is different from other banks, being lead-coloured mud.† There is good fishing at 13 or 18 miles from land.

ZULU SHOAL.—This danger, on which the Union Steamship *Zulu* touched in 1875, lies in the track of steam communication between port Natal and Delagoa bay, 1½ miles from the shore, nearly midway between Tugela river and cape St. Lucia. The approximate position assigned to Zulu shoal is, lat. 28° 51′ S., long. 32° 5′ 50″ E.

Immediately after the *Zulu* touched the ground the lead was hove, but no bottom found with 10 fathoms; the sea at the same time was observed breaking to seaward in a north-east and south-west direction for a distance of 1½ cables.

CAPE ST. LUCIA from the eastward makes at first like a number of islands, which are the summits of the various sand hills comprising the cape; the highest is a sharp peaked hill 350 feet high, thence the range extending to the northward is covered with stunted brushwood, its base being devoid of vegetation, and ending abruptly in the bluff hill which marks St. Lucia river. The coast north of the river consists of low sand-hills gradually rising into a series of hillocks as cape Vidal is approached.‡

If the land be made during the morning and be well in sight, two remarkable sand patches resembling the lateen sail of a dhow will be seen just south of cape St. Lucia. If the vessel be set to the southward, a remarkable bare sand hill with a slightly defined peak on its southern end will be seen. *See* view on chart, No. 2,089. The coast from the cape southward assumes a bolder aspect than it does to the northward. The land is high, and makes like a series of bluff capes projecting into the sea.

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* Owen, 1823.

† R. Beecroft, Master, R.N., 1823.

‡ Nav. Lieut. J. W. Dixon, H.M.S. *Nassau*, 1875.

Current.—At 3 miles off cape St. Lucia the current in December set to the south-westward, in the direction of the coast, at the rate of 2 miles an hour.

St. Lucia Bay, northward of cape St. Lucia, is entirely exposed to winds from seaward between N.E. and S.W. After north-easterly or easterly winds, a swell rolls in and causes heavy breakers on the beach, thus rendering landing impracticable in ship's boats: communication with the shore while these winds are blowing would have to be made by means of decked surf boats.*

The breakers appear to be heavier here than on the coast south of cape St. Lucia; this may be caused by the waters being heaped in the bay; a similar instance occurs in Rovuma bay.

Soundings.—With the mouth of St. Lucia river bearing W.N.W. distant 3 miles, H.M.S. *Nassau* obtained soundings in 25 fathoms sand; to the north-east of this, 24 fathoms, brown sand; whilst to the southward were 22 and 26 fathoms, rock. Proceeding from the depth of 25 fathoms towards the river the depths decreased gradually with rocky bottom until 9 fathoms, sand, were obtained at a distance of 8 cables from the breakers, where a short hollow sea was breaking.

Discoloured water exists in patches in deep water all over St. Lucia bay, and 4 miles south-east of cape St. Lucia.

St. Lucia River.—At the time of H.M.S. *Nassau's* visit to St. Lucia bay in December 1875, the mouth of St. Lucia river was completely blocked up by a bar of sand, apparently of such an extent as to render it doubtful if it could be swept away by floods; but probably during the rainy season the river may become sufficiently flooded to open a channel for boats. The river is marked by a bluff hill, 200 feet high, on the south side of entrance; when the hill bears northward of N.W. by N., a sharper peak, 120 feet high, a little west of the hill will be seen. From the *Nassau's* masthead the river inside the bar appeared to be shoal in patches with several small bushy islets.*

Captain Owen, in 1823, writes:—This river, in the dry season, is completely blocked by a dry bar of sand, which is annually swept away by the flood. Mr. Consul McLeod, in 1857, describes the St. Lucia as a port admirably adapted for throwing supplies of useful commodities into the Zulu country, to be transported from thence into the Orange Free States and Transvaal Republic.

COAST.—From St. Lucia river the shore trends about N.E. by E. ½ E. 12 miles, and then N.E. 6 miles to cape Vidal, in lat. 28° 9′ ½ S., long. 32° 38¼′ E. The sand-hills north-east of the river are about 150 feet high, and are higher towards the cape: the projecting points of the coast are surrounded with rocks. In the latitude of cape Vidal, and 5 miles distant, the soundings are 27 fathoms; the bank is deeper at that distance from shore both north and south of cape Vidal.*

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* Nav.-Lieut. J. W. Dixon. H.M.S. *Nassau*, 1875.

The shore from cape Vidal to the north-east end of Inyack island, Delagoa bay, a distance of about 132 miles, runs about N.E. by N., in a nearly straight (slightly convex) line. The coast, which is moderately high close to the beach, is a continuous line of sand-hills from 50 to 500 or 600 feet high, which, when first seen, have the appearance of a number of small islands. There are a few straggling black rocks along the shore; their appearance seems rather singular, as the only other places almost where a stone near the sea can be found north of St. Lucia river, are a small rock off cape Corrientes, a spot near Lagoa river, and Reuben point, the last two places having some rocks of indurated clay.*

The only prominent feature between cape Vidal and Oro point appears to be a steep-looking bluff, about half way between those points, off which at 6 or 7 miles from the shore, there is no bottom with 100 fathoms.† Towards cape Colatto the land is well wooded. The interior south of Inyack seemed to be a low level country, with some knots of trees here and there like park land, but about 10 or 12 miles inland, a few hills apparently 800 or 1,000 feet high, are visible.* This coast is very little known, but there is no reason to suppose that any dangers are off it.‡

Kosi or Goldown river appeared navigable for small vessels, and to have a lagoon inland. Captain Owen passed its assigned position, without observing the entrance of a river or any opening to the sea. He nevertheless gives the position of the mouth of the river in lat. 26° 55′ 30″ S., and long. 32° 52′ 57″ E.

CAPE COLATTO or Santa Maria is the northern extremity of the peninsula of Inyack, which with Inyack island and its shoals projecting northward, forms the eastern boundary of Delagoa bay.

Inyack peninsula is moderately high, and has a round topped hill called mount Colatto towards its northern extreme. The peninsula is separated from the island by a sunken reef through which there is no passage.§

INYACK ISLAND, to the northward of Inyack peninsula, is about 6 miles north-east and south-west, by 3½ miles across. The north-western part is low, and encloses a shallow lagoon which is fronted by Elephant island on the west, and open to the southward. Black bluff has a red streak on its northern and highest face, and is the only elevated land on the west side of the island. The south-eastern coast is of moderate height, the south-west hill being about 240 feet high, westward of which the land is low. Inyack hill, 350 feet high, the highest part of the island, is 1¾ miles to the southward of cape Inyack.

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* Captain Owen, 1823.

† Captain J. S. Pullen, R.N., 1861.

‡ *See* Admiralty chart:—Sordwana point to Delagoa bay, No. 2,090; scale, *m* = 0·25 inch.

§ *See* Admiralty plan:—Delagoa bay or Lorenzo Marques, No. 644; scale, *m* = 0·5 inch.

Cape Inyack, which is the north-east extreme of the island of that name, is in lat. 25° 58′ S., long. 33° 1′ 45″ E. It has a steep face, with a sand hill on its extremity and tolerably level land adjoining, and is not unlike cape Natal on a small scale. The east coast of Inyack may apparently be approached to a mile, but we have no complete survey of it. A dangerous patch of live coral with only 5 fathoms water on it, lies 3 miles N.E. by E. ¾ E. from the cape, and at half a mile or a mile westward of this position coral heads have been plainly seen; the sea breaks at half a mile N.N.E. of the cape.

Nav. Lieut. Alfred Hackman, H.M.S. ship *Sirius*, 1876, writes, mount Calatto is not easily distinguished, and is therefore of little use as a leading mark. Cape Inyack is an abrupt bluff having near it to the southward a remarkable dome-shaped hill.

DELAGOA BAY was originally named Lorenzo Marques after its discoverer, who was one of the earliest of the Portuguese navigators. The entrance extends from cape Inyack to lat. about 25° 35′ S., a distance of 25 miles, but the principal part of this distance is obstructed by shoals, the depth varying from 7 to 2 fathoms at low water. From Elephant island on the north-west side of Inyack island to Reuben point at the north side of entrance to English river, the bay is 15 miles across, southward of which it extends 23 miles, but this southern portion is only shallow flats with deep channels, here and there. The depths in the navigable parts of the bay vary from 6 to 12 fathoms, all good anchoring ground; there are, however, some spots of 20 fathoms or more between the north end of Cockburn shoal and Lech reef, where the channel for large ships is contracted to about 3 miles.*

Three large rivers empty themselves into Delagoa bay, viz.:—the King George, the English river, and the Maputa. The great deposit ejected by these streams has caused shallows and flats, which renders the navigation of the bay somewhat intricate.

The Bar of Delagoa bay commences at cape Inyack and Elephant island, from whence the first part of it, called Cockburn shoal, extends north 4 or 5 miles, and has no passage through it. From Cockburn shoal northward, the bar appears to consist of three principal shoals, called respectively, Hope, Domett, and Cutfield flat, with tortuous channels between them. Home and Domett shoals have depths varying from 2¼ to 4½ fathoms. Cutfield flat, the northernmost of these shoals, is the shallowest, having only from 2 to 3 fathoms water on it, for an extent of 3 miles N. by E. and S. by W., leaving a clear channel 2 miles wide between its northern extremity and the shallow ground extending from the shore.

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* With reference to the disputed right of sovereignty over certain territories on the south-east coast of Africa, the award of his Excellency the President of the French Republic in 1875, was to this effect:—"That the claims of Portugal over the territories of Tembe and Maputo, over the peninsula of Inyack, and over the islands of Inyack and Elephant, are duly proved and established."

This channel, which has not less than 9 fathoms in it, is doubtless the best and only safe one for a large ship. Cutfield flat is generally visible by the colour of the water.

Although Cutfield flat is the northern extreme of any known danger, Captain Owen considers the bar to extend as far as the shoals westward of Lagoa river, a distance of about 15 miles from Cutfield flat. In confirmation of this, the *Brisk* in proceeding to sea in 1860, after rounding Cutfield flat and when it was considered that the vessel was well clear of the bay, the soundings shoaled in some places to 6 fathoms rather suddenly, when several miles out to seaward. The bottom appears to be a succession of sand ridges, with 6 and 7 fathoms on them, and from 9 to 11 fathoms between the ridges.

H.M. brig *Bittern* in 1845, found the bar after two days strong south-westerly winds, apparently breaking all the way from Inyack to the northern shore. In crossing it, going 8 knots with a leading wind, the *Bittern* shipped a great quantity of water, the depth being 6 fathoms the moment before the sea broke over her.*

Tides.—The time of high water, full and change, varies from 4h. 30m. at Shefeen island to 5h. 20m. at the Portuguese factory in English river, and the rise is from 12 to 15 feet: neap tides rise about 7 feet.

Seaward of the shoals the first of the flood was found setting to the northward at the rate of 2 knots; a strong indraught towards Cockburn channel. The last of the ebb was found setting in an opposite direction.

Inside the shoals the flood sets to the south-westward through the channel, over Shefeen reef and towards English river at the rate of about 3 knots. The ebb sets in the opposite direction.

LIGHT VESSEL near Cockburn Shoal.—A light vessel is moored N.W. ¼ N. distant $6\frac{3}{16}$ miles from cape Inyack, and 9 cables from the nearest part of Cockburn shoal. Position, lat. 25° 55′ 15″ S., long. 32° 54′ 30″ E. The vessel shows a *fixed* white light, is painted red, and has two masts.

Natal Shoal.—This danger, on which the steam vessel *Natal* drawing 12 feet struck in 1877, is composed of sand, with 3 to 4 fathoms water close around, and lies in the fairway between Cockburn channel and English river. From the shoalest part, Reuben point bears W. by N., Black bluff S. by E. ⅞ E., and cape Inyack S.E. ½ E. This position is only approximate.

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* Commander Peel, R.N., 1845.

There are probably other knolls between Natal shoal and Lech reef; and as the flood tide sets strongly to the westward over the reefs, a good berth should be given to this dangerous neighbourhood.

DIRECTIONS.—Pilots for Delagoa bay are not to be obtained. Approaching this bay from the eastward, the latitude and the lead are the best guides. At night in favourable weather, ships may approach the bay by the lead, if certain of being well to the northward of Inyack island, taking care not to stand into less than 10 or 12 fathoms, when they may anchor or stand off according to circumstances.

The safest course for a large ship is to make the land well to the northward between the parallels of 25° 25′ and 25° 38′ S., and coast southward along shore. In the *Brisk*, the land was made in about 25° 35′ S. (having anchored outside over night), thus passing to the northward of Cutfield flat. The Cutfield hummocks could not be distinguished from anything else, the whole coast being a line of hummocks and sand-hills. From abreast of the position of Cutfield hummocks the coast was followed at about 2 miles distance, in from 7 to 9 fathoms, until George hill was made out. George hill is not remarkable, the land being rather low about it, and the hill not much above the level.

To clear Shefeen reef on the one hand, and Cockburn shoal on the other, bring mount Colatto somewhat in the form of a haycock on Inyack peninsula, over the low part of Inyack island, and a little open of the west end of Elephant island about S. ¼ W. If bound to port Melville, stand on with the above marks until within a quarter of a mile of the low sandy point of Elephant island, which is bold; then steer to the SW., and anchor with the extremes of Elephant island bearing E. by N. ¼ N. and S.E.

In proceeding for English river, follow the directions given at page 156, paragraph 3 ; but caution is requisite after passing the light vessel as the position of Natal shoal is uncertain; the want of conspicuous objects preventing the position of the S.S. *Natal* when she struck, being accurately determined. A good position from whence to proceed into English river, when the tide suits, is in 5 fathoms, with the extremes of Shefeen island bearing N.E. by E. and N.N.E., and Reuben point W. ¼ N.

Small vessels in favourable weather may cross the shoals, but in the absence of buoys, the channels should not be attempted by vessels of heavy draught, as the colour of the water does not sufficiently indicate the position of the shoals.

H.M. Ship *Danæ*, in the early part of 1878, crossed the shoals in lat. 25° 49′ S., and the least water was 4 fathoms; the vessel's position was determined by bearings of cape Inyack, Black bluff, and Cutfield hummocks. George hill was not seen until within the shoals. The light vessel bearing S.W. by W. ½ W. is said to lead across the shoals in 24 feet.

SOUTH CHANNEL.—Vessels from the southward under 18 feet draught, and under favourable circumstances such as smooth water and a rising tide, may enter Delagoa bay by Cockburn channel between the Cockburn and Hope shoals. Bring cape Inyack to bear West distant 3½ miles, then steer N.N.W. 4½ miles or until the cape bears S.S.W. Then steer W.N.W., keep the lead going, and as the vessel proceeds verify the position occasionally by bearings of cape Inyack, and the low west extreme of Elephant island; when the latter bears about S.S.W. the vessel will be within the shoals, and may steer with the light vessel on the port bow, and proceed as directed in the next paragraph southward of the Natal shoal, for the anchorage near Shefeen island.* The *Danæ* proceeded to sea by this channel, but as the passage is narrow, and tides strong, it is not recommended.

Lieut. J. St. C. Bower, H.M. Ship *Danæ*, 1878, writes:—In entering from the southward, perhaps the best route would be, after passing about a mile to the eastward of cape Inyack, to steer N. by E. for 3 miles; then bring cape Inyack to bear S. ½ W., and keep it on that bearing until the light vessel bears S.W. by W. ½ W. Steer for the light-vessel on this latter bearing across the shoals, until within a cable of her. From the light vessel steer W. ½ N., passing to the southward of Natal shoal (*see* p. 155), until the left extreme of Shefeen island bears N.N.W., when haul up W. by N. ¼ N. and steer to pass Reuben point at half a mile distant. Keep in mid-channel, and moor in 10 fathoms, mud, off the end of the pier.

ENGLISH RIVER.—This river forms an excellent landlocked harbour, indeed the only one for large ships between the cape of Good Hope and Mozambique. The harbour may be said to extend from inside the bar to the confluence of the three rivers, a distance of over 7 miles, with good water throughout. The shores of English river are generally low and wooded. Reuben point (ponta Vermelha), on the north side of entrance, is a bold red bluff about 200 feet high, rising abruptly from the sea, with a lighthouse and signal station on it. Mawhone point, on the south side of entrance, 2½ miles from Reuben point, has two faces of red earth, which show well against the dark foliage adjacent; though as the heat of the day begins the red colour of these points is obscured by mirage.†

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* H.M.S. *Peterel* went in nearly on this route, at about three-quarters flood, and the least depth was 6 fathoms.

† *See* Admiralty plan:—English river, No. 646; scale, *m* = 1·9 inches.

LIGHT.—From a small scaffolding about 50 yards inside Reuben point (ponta Vermelha), is exhibited at 134 feet above high water, a *fixed* white light, said to be visible in clear weather, through an arc of 215° between the bearings of about S.W. by W. ½ W. and E. ½ S., from a distance of 14 miles.*

Bar.—The bar of English river has about 14 feet on it at low water springs, and about 25 or 26 feet at high water springs. To cross the bar in the deepest channel, after considering the vessel's draught and the state of the tide, bring Reuben point to bear about W. ½ N. and steer for it; when a long 1½ miles from it, with Mawhone point bearing about S.W. ¼ W., then steer S.W. by W. ½ W., and when Lechmere point (a low sandy point on the western shore within the entrance) comes open of Reuben point about N.W. ¼ W. haul gradually up so as to pass Reuben point at the distance of half a mile.

These directions do not, however, require to be strictly attended to, as the bar throughout its width of over 3 miles in places appears to have a depth of nowhere less than 13 feet at low water, except off Mawhone point on the south side of entrance, which has some rocks off it, and from which the shallow ground extends considerably more than halfway across to Reuben point. A sand spit also extends from Mawhone point about E. by N. for 3 miles.

Nav.-Lieut. A. Hackman, H.M. Ship *Sirius*, sounded over the bar and over the western part of Delagoa bay, in June 1876, and found less water, generally, than formerly shown.

Buoys will shortly be placed on the extreme of the shoal water off Mawhone point, and on the extreme of the shoal water off Reuben point.

Anchorage.—A vessel may anchor in 9 fathoms, with the fort flagstaff N.E. by E., and Lechmere point N.W. ¼ W., or anywhere along the north-east side of the river below Lechmere point, giving a berth, however, to a mud flat, which extends off some distance between the fort and Reuben point. Vessels lying here should be moored, particularly about the time of spring tides. The bight between Mawhone and Lechmere points is all shoal. Above Lechmere point there is deep water nearly all the way to Refuge island, but this part does not appear to have been thoroughly sounded.

Lorenzo Marques.—The Portuguese town of this name, the southernmost establishment of that nation on the east coast of Africa, is on the north-east side, about 1½ miles inside Reuben point. The fort is in a dilapidated condition, but suffices as a stronghold for the Portuguese garrison in case of attack from the natives. The establishment is almost surrounded by a swamp, and this appears to have been the reason for choosing it as a military position, but it is consequently very unhealthy.

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* Too much reliance should not be placed in the visibility of this light, as at present, it can only be seen about 5 miles.

At 1¼ cables westward of the fort is a wooden pier; its extreme dries at low water.

Products.—The shores of Delagoa bay are divided into various kingdoms or tribes, which, at the time of Captain Owen's survey, 1822, were thickly populated. The land is generally of moderate elevation, with a rich dry soil, but lakes of stagnant water also abound. The sugar canes, indigo, pumpkins, pines, and numerous other fruits are indigenous, also the orchilla weed, from which a valuable dye is made. Rice, maize, millet, &c., are plentiful; also honey, beeswax, dye woods, tortoiseshell, amber, &c. The country in the vicinity of the rivers abounds in elephants, elk, and hippopotami; and in the bay whales, seals, and abundance of turtle may be taken. The export trade is, however, very small.

In 1875, 22 vessels, amounting to 8,488 tons, left Delagoa bay for port Natal. The mail packet calls at Delagoa bay about once a month from Table bay and port Natal, and thence to Inhambane, Quilimane, Mozambique, Zanzibar, and Aden, and *vice versâ*. A fair amount of cargo is received at this port from Mozambique, and Portuguese and Banian passengers are frequently backward and forward.

Seasons.—The barometer rises with southerly and falls with northerly winds. From September to March the weather is mostly fine, although it is the rainy season. At this season the fine weather is accompanied by strong sea breezes at E.N.E., succeeded by light land winds at night. After some days fine weather the sea breeze fails, and rain comes on with southerly or south-westerly winds. Southerly gales of 36 hours duration, are not unfrequent, blowing a gale which draws to the southward, and becoming fine at S.E. The wind then draws round gradually to N.E., and it continues fine for a few days, then undergoes a similar change.

The regular sea breezes in the bay are from S.E. and East, and are mostly succeeded by land winds, but at times the sea breeze only relaxes in strength for two or three nights running. Bad weather always comes on with winds from West to South, improving as they draw round to East.

Climate.—Delagoa bay has acquired the reputation of being very unhealthy for Europeans, and it doubtless is so up the rivers and in the vicinity of swamps. It was whilst engaged in the survey of the rivers in particular that the climate proved so fatal to the officers and men under Captain Owen. But there is no reason to suppose that port Melville is particularly unhealthy, as it is exposed to the sea breezes and at a considerable distance from any rivers; on the contrary, Inyack island is said to be used by the natives as a sanatarium.

Water, &c.—This is not a convenient place for watering ships. A small supply may be obtained from the well at the Portuguese fort; it is good, but not convenient for shipping. In a small bay just within the river's mouth are the remains of a well, made by the Dutch in 1719–36; it is immediately under the pathway up to the face of the cape.

Water may be obtained in most places on the banks of the rivers by digging for it as the natives do. But perhaps the best way to obtain a large supply of water would be to proceed in the ship as near as convenient to the mouth of Dundas river, and send boats 3 or 4 miles up that river, where the river water is said to be fresh. Refreshments are scarce.

Tides.—It is high water at English river, full and change, at 5h. 20m.; springs rise 12 feet. The tides run strong at springs between the fort and the opposite shore.

Temby River, the southernmost of the three tributaries of English river, is broader and deeper than the Mattoll. Including the windings of the river the boats under Captain Owen's orders ascended 46 miles, when the river divided into two branches. Proceeding a short way up the southern branch, which was about 80 feet broad, they were soon stopped by a barrier of trees which had fallen across from bank to bank. Vessels drawing 13 feet can navigate the Temby for a distance of 19 miles from its mouth. The water of this river is salt. The natives are peaceable and tractable.

Dundas River (also called Lorenzo Marques) is between the Temby and the Mattoll. This river is inconsiderable, but it has the advantage of its water being fresh a few miles up. There is a ford 9 miles above its confluence with the other rivers, which boats can only cross at high water. A short distance below the ford the river is 80 yards wide, and 10 feet deep, and the water there is quite fresh.

Mattoll River is the northernmost tributary of English river. It is 320 yards wide, and 16 feet deep, at the junction. Proceeding 8 miles up this river, its width diminishes to 30 yards, and depth to 8 feet, above which boats can ascend but a short distance. This river is salt as well as the Temby, but, under the guidance of a native, a good supply of water may be obtained on the bank above the junction.

Maputa River runs into the south-west part of Delagoa bay, from whence there are two channels through the flats, one of which leads to port Melville, and the other towards English river. The Maputa is a fine river, said to be navigable for 60 miles, and at high water springs, 5 fathoms can be carried through the channels in the flats to the river.

For the first 12 miles the banks are of low alluvial soil, and lined with forests of mangrove, but farther up the river the country becomes more open. The *Cockburn* tender, under the orders of Captain Owen, appears to have ascended about 20 miles (her draught of water being 8 feet), and the boats explored as far as 40 miles from the mouth of the river, but they did not proceed any farther on account of the fatal fever which attacked the crew. The current was strong in the river, but the tide ascending some miles, enabled the boats to beat against a strong wind, although the river is everywhere narrow, and its navigable channels still more so. The mosquitoes at night were intolerable.

Commander Cochrane, H.M.S. *Peterel,* in March and April, 1869, states:—For the first 17 miles up the river, the banks are of low alluvial soil lined with forests of mangroves, after which it is a fine open healthy country with sandy soil, the banks being about 6 feet above high water. The tide reaches as far as 30 miles including the winding of the river. There are beautiful plains all along for 2 miles on either side of the river, and fine ranges of hills were passed before reaching the foot of the Libomba mountains. The narrowest part is 60 yards wide, and its greatest breadth at the mouth and fork 300 and 150 yards.

For the first 20 miles, 18 feet water was carried, the next 50 miles an average of 6 feet, the next 30 miles about 4 feet, and the last 30 miles about 2 feet, gradually shoaling to where the river could be forded. The ford is 2 miles beyond the fork up the Usutu river. The water was fresh at ebb tide near the mouth.

The ebb tide at entrance runs very strong for about 7 hours, and from 2½ to 5 knots in some of the bends of the river. From the strength of the stream the fork of the river was not reached until the seventeenth day, working night and day. Considering the turns and bends of the river the probable distance over the ground was at least 130 miles, though in a straight line from the mouth of the river it is only 56 miles S. 42° W. true.

King George River, also called the Manhica, runs into Delagoa bay to the northward of Shefeen island. It has a shifting bar, and the river frequently bursts its banks to find other outlets in the great bay. This river, according to Dr. Livingstone's map, is said to run 600 miles or more inland, changing its name to the Limpopo when to the westward of the range of mountains. Whether it be so extensive as this or not, a large body of water doubtless comes down the river, making the current strong and navigation difficult. Captain Owen's expedition carried 22 feet into the river at high water, and ascended nearly 50 miles, then gave up the exploration on account of fever attacking the crew. For this distance the river was not at any part more than 3 or 4 miles from the sea-shore. The current ran 2½ knots, and the water was fresh close to the mouth.

Mr. Hilliard reports having ascended the river from 120 to 140 miles in the cutter *Herald*, the depth of water being 12 to 18 feet in the channel, and from 6 to 9 feet near the banks for the whole distance, the cutter frequently brushing the banks with her mainsail, whilst having plenty of water under foot. Only one shallow (6 feet) was found in the whole distance of 120 or 140 miles. On the west side runs a ridge of high land, which approaches the river at a few points, but is frequently separated by a flat marshy tract of country many miles in width, and densely covered with a coarse kind of guinea grass 5 or 6 feet high.

On the east side flats of a similar kind reach from the river to the sea; from the highest point attained by the expedition, these flats were only bounded by the horizon. The banks cannot easily be penetrated where the grass has not been burnt, and it is necessary to be careful in landing, as they are in some places honeycombed with pitfalls for hippopotami and other animals. For some miles from the mouth the banks are more or less covered with bush and mangrove jungles, but for many miles of the upper part of the journey there is no timber, except here and there a straggling fir tree, bent over the river by the force of the S.E. winds. Above the influence of the tide the river becomes narrower and very serpentine.

Shefeen Island, between 4 and 5 miles in length, lies E.N.E. and W.S.W. along the coast of the bay. It is low, sandy, covered with dense bush, and abounds in deer and other game, but which is difficult to get at; water may be obtained. The lower part of the island is all white sand, and at a distance it is difficult to distinguish the island from the main land.

Shefeen island is surrounded with shallow water and detached sand patches of small extent, with from 6 to 12 feet water on them, which extend to the eastward about 6 miles.

These dangers lie on the western side of the channel with deep water close to and around them. Mount Colatto bearing S. ½ W. and a little open of the west end of Elephant island leads eastward of the extreme of these dangers. The discoloured water is at times discernible.

Port Melville is a good harbour in all winds, being sheltered by Inyack and Elephant islands and Cockburn shoal on the east, and by shoals on the west, which are discernible by the colour of the water. This is a safe port to come to for refitting and refreshments, and far better than English river on account of the unhealthiness of the latter. Refreshments may be obtained from the natives of Inyack, but bullocks are scarce. Purchases should be made with goods, as money is almost useless here.*

Elephant Island, about a mile from Inyack island, is 1½ miles in length, but not being more than 20 feet above high water mark, is difficult to make out when in a line with Inyack. It is sandy, with bushes on the top, and uninhabited; brushwood may be cut without molestation. The west point of the island is bold, having 10 and 12 fathoms water pretty close to it. This, considering the rise and fall of tide, would be a good place for docks.

Water.—Good water may be obtained with a little trouble. Wells should be dug 10 or 12 feet deep, about 70 yards inland on the west and the highest part of the island. H.M.S. *Orestes* obtained from 6 to 8 tons a day by sinking casks in the sand.

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* *See* Admiralty plan:—Port Melville, No. 645; scale, *m* = 2·3 inches.

Tides.—It is high water at port Melville, full and change at 4h. 30m.; springs rise 14 feet, neaps 7 feet.

COAST.—George hill, the summit of an islet at the entrance of the river of that name, is only a little above the neighbouring coast, and not of much use as a mark. It might, however, be of some service to a vessel from the northward in her approach to the shallow water extending eastward from Shefeen island, being about 2½ miles northward of its parallel. The shore to the north-east of George hill is a flat sandy beach, backed by a low coast covered with bush as far as the Cutfield hummocks, the highest of which, a sandy hillock with a bushy top, can be seen from a position 2 miles south of Domett shoal, a distance of about 16 miles.* Thence eastward the coast consists of high sandhills to latitude 25° 25′ S., where there are two clusters of remarkable peaks, which form an excellent landmark,† then continuing eastward for about 130 miles to Zavora point, is a line of sand-hills, which when first seen make like small islands.

Lagoa Shoals.—To the westward of Lagoa river there are some shallow knolls to the distance of 4 or 5 miles from the shore. H.M.S. *Barracouta*, when surveying under Captain Owen's orders, passed within these knolls with more water than there was in some places outside. These patches appear to be a continuation of the bar of Delagoa bay.‡

Lagoa River, in lat. 25° 20½′ S. and long. 33° 10′ E., appears from seaward to be a large opening in the land, but, on examining it within 2 miles, Captain Owen could see no entrance, but a considerable collection of water within the beach sands.

Inhampura River is placed by Captain Owen in lat. 25° 11½′ S., long. 33° 28¼′ E. We have no information about it, neither have we any about another river in lat. 24° 49′ S., long. 34° 31′ E.

Inhampura Shoals, to the eastward of the river of that name, are placed by Owen with their north-east extreme in lat. 25° 10′ S. long. 33° 46¼′ E., and their south-west extreme in lat. 25° 12½′ S., long. 33° 39½′ E. Beyond their position as above, we have no information about these shoals.

ZAVORA POINT, in lat. 24° 30′ S., long. 35° 13′ E., is about 26 miles southward of cape Corrientes. There is a bank of soundings from Zavora point southward and westward, with depths varying from 22 to 70 or 80 fathoms. In lat. 24° 54′ S., at 20 or 25 miles from shore, H.M.S. *Andromache* found 31 fathoms, from whence, proceeding N.W. by W. ½ W. 14 miles, the depth decreased to 22 fathoms mud, and she then got suddenly off the bank. There is reason to think there is less water on this bank in some places.

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* Lieut. J. St. C. Bower, H.M.S. *Danae*, 1878.

† Nav.-Lieut. Alfred Hackman, H.M. Ship *Sirius*, 1876. ‡ Owen.

CHAPTER V.

WINDS.—CURRENTS.—PASSAGES.

WINDS in the MOZAMBIQUE CHANNEL.—The northerly monsoon commences between mid-September, and mid-October, and the southerly monsoon between mid-March and mid-April. The change occupies a few days or more, and is generally accompanied by squally weather. To the southward of lat. 20° S. the northerly monsoon ceases and the winds are variable, with a greater prevalence of South and S.S.E. winds than any other, particularly on the Madagascar side, near the south-west end of which, S.E. and E.S.E. winds prevail all the year round, but do not extend far up the coast.*

The northerly monsoon is usually accompanied by fine weather and smooth water during October, November, and December; but then rains commence on the coast, and variable winds and calms may be expected in its vicinity; but on the whole, fine weather and N.E. winds at sea. In the vicinity of the Comoro islands, the N.E. winds rarely set in strong before the middle of December; for three consecutive years their first decided *blow* was observed to occur on the 25th December. During this monsoon the southerly winds which prevail southward of the tropic occasionally force their way northward, overcoming the monsoon even as far north as the Comoro islands, and blow a double-reefed topsail breeze; in the southern part of the Mozambique channel these winds amount to a gale. This weather is preceded by heavy banks of cloud to the southward, with gloomy weather, but does not last long.

From Zanzibar to the equator, during the months of February and March, although part of the northerly monsoon, winds prevail from E.N.E. to E.S.E. At this season, therefore, it is practicable for dhows to make their way thus far northward. The weather hereabout during these months is fine, with occasional showers and sometimes thunder and lightning, but no heavy squalls. The north-east monsoon, which commences in the Arabian sea about the middle of October, does not at times reach the coast of Africa southward of cape Guardafui until the middle or end of November; the change is generally ushered in by shifts of winds, calms, squalls of rain and obscured sky. In 1874–5 the north-east monsoon was so light that many dhows failed to reach Zanzibar, and had to put into Mombaza.

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* *See* Admiralty Atlas, Wind and current charts for the Pacific, Atlantic, and Indian Oceans, 1872.

The south-west monsoon, which commences in the Arabian Sea about the middle or end of April, attains its full force in May or June, and continues until September, blowing stronger and steadier, and accompanied by a heavier sea at a distance from the land than near the coast. On the east coast of Africa it blows very strong from about S.S.W. and continues with full force through the channel between Sokótra and cape Guardafui. In May it has béen observed to be influenced by land and sea breezes near cape Guardafui, the wind hanging a great deal to the southward and eastward with heavy squalls, rain, and overcast sky.

At the Comoro islands the south-west monsoon sets in during the middle of March, when heavy squalls from the westward and much rain may be expected ; and it may be stated generally, that the northern part of the Mozambique channel may be considered as the southern extent of the south-west monsoon, which sets in earlier in the southern, and later in the northern parts of the coast, and then reaches the west coast of India.*

The southerly monsoon blows with much regularity at about S.S.E. between Europa island and Mozambique. Between Mozambique and cape Delgado, and at the Comoro islands, it varies from S.W. to S.S.E. becoming steadier at South, thence to Zanzibar. This monsoon is called the fine weather season, and is generally free from gales; but there is much more wind and sea in the Mozambique channel than during the northerly monsoon; vessels proceeding to the southward will frequently find a hard double-reefed topsail breeze and heavy sea.

On the coast of Madagascar land and sea breezes prevail; the former being very light and lasting from about midnight till noon; the sea breeze generally sets in during the afternoon, increasing in force till sunset, when it subsides and gradually dies away towards midnight, followed by the land wind. In the evening within 20 miles of the coast lightning and thick banks of clouds are common, having a threatening appearance, but generally harmless. Midway between Madagascar and the coast of Africa the wind is from the southward, except to the northward of about the parallel of 20° S. during the strength of the north-east monsoon.

Hurricanes are said to have occurred towards the latter end of January at Mozambique in former years, *see* page 215, and that place was visited by a severe one on the 1st and 2nd of April 1858, during which several vessels were driven from their anchors in the harbour, and much damage was done. These hurricanes, however, appear to be quite local, and there are no reports of any having occurred in other parts of the Mozambique channel, although severe gales are occasionally experienced. The Indian Ocean hurricanes, which at times do so much damage in the vicinity of Mauritius, appear to be intercepted by Madagascar before reaching the Mozambique channel.

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* For some accounts of the change of monsoon near the coast, *see* pages 249, 250.

A hurricane occurred at Zanzibar commencing at 9h. p.m., on the 14th April 1872, blowing strong from S.S.W. accompanied by rain; it increased in force and veered to South till about 1h. 30m. p.m. of the 15th, when it suddenly became calm, the barometer having fallen 0·9 inches below the normal height. At 2h. 15m. p.m. the barometer commenced to rise, and the cyclone burst upon the town and harbour from the opposite quarter N.N.E., veering round by north to W.N.W. where it settled, but moderated considerably between 4h. and 8h. p.m. One English steamer alone did not part her cables; all the other vessels in the harbour, including several vessels of war belonging to the Sultan, and numerous native vessels were driven ashore and wrecked.

On the island of Zanzibar, the hurricane swept over the island and destroyed all in its path, but leaving the southern part uninjured.

CURRENTS in the MOZAMBIQUE CHANNEL.—A branch of the great mass of water which flows westward from the southern Indian ocean and round the north end of Madagascar, strikes the coast a little southward of cape Delgado, generally about the parallel of 11° 0′ S., where it divides: one part flows northward,* past Zanzibar and Pemba islands, and thence on to cape Guardafui, during the southerly monsoon; but during the northerly monsoon it is deflected from the land to the eastward before reaching the equator; the other part flows southward through the Mozambique channel, following the coast of Africa, and is joined by the current which flows past the south end of Madagascar towards the cape, and the two united form the great Agulhas current.

The above appears to be the main streams of the currents in the Mozambique channel, but their strength varies much, and the whole space outside these streams is complicated by strong counter or variable currents, which scarcely run two consecutive days alike, and defy all attempts to ascertain a vessel's position, without frequent observations.

From cape Delgado northward, the velocity is much influenced by the monsoon; its average rate may be taken at 1½ miles an hour, but during the south-west monsoon it runs past Mafia, Latham, Zanzibar, and Pemba islands at from 2 to 4 miles an hour, particularly in April and May; and in the north-east monsoon from one to 3 miles an hour. It runs through the passage between Zanzibar and Pemba islands, and up Pemba channel to the northward with great velocity, being deflected to the eastward only on meeting the southerly current in the north-east monsoon. This northerly current becomes weaker as the distance from shore is increased, but near the land it continues its course north-eastward to latitude about 1° 30″. S., where, during the northerly monsoon, it meets the southerly current, and the two produce an off-set from the land.

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* *See* foot note at page 2.

On three occasions about the months of February and March, H.M.S. *Gorgon* experienced a north-westerly current of 20 miles a day as far north as Castle point, whereas to the northward of this point, the current was south-westerly more than 30 miles a day ;* other authorities also consider that the vicinity of Castle point is the whereabouts of the contact of these two currents. The meeting, however, of the two currents in the vicinity of Castle point must be accepted with considerable limitation, as it does not appear to be at any fixed place. The place of meeting probably varies with the season, extending southward according to the strength of the north-east monsoon, the full force of which is between November and March.

From cape Delgado southward the current generally runs 1½ or 2 miles, increasing at times to 4 miles an hour, from near the outer reefs of Mozambique to 50 or 80 miles from the land, beyond which a counter or variable current will generally be experienced; farther south, between Angoxa and Mozambique in the month of March, it has been estimated to run 90 miles in 24 hours, *see* pages 203, 215 ; whilst on two occasions in the latter end of August, the usual southerly current setting down the coast towards Mozambique, was not felt at all. Between the Comoro islands and the outer edge of the southerly coast current, and thence southward until past the narrow part of the Mozambique channel, there is no dependence to be placed on the direction or force of the current, it may run 3 miles an hour one way, and at times as much another.

Off Mozambique the current has been known to set S.E. by E. 4 miles an hour, and 60 miles to the southward N.N.W. and W.N.W., from one to 2½ miles.

In the vicinity of the Comoro islands, the current generally runs to the westward, but a little to the southward of the islands there is frequently a counter current setting to the eastward, partly owing to which, H.M. tender *Enchantress* (formerly the prize slaver *Manuela*) was lost on the western reefs of Mayotta. To the northward of the Comoro islands, a north-westerly current of one or 1½ miles an hour is generally found.

The current setting westward, north of Madagascar, averages 2 miles an hour, not unfrequently 3 miles, but this strength does not extend more than 50 miles to the northward of cape Amber.†

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* H. W. Inglis, Master, R.N., 1863.

† A dingy belonging to H.M.S. *Diamond* was lost in the middle of June, 1877, on the north-west coast of Madagascar and was found in the beginning of September, or about 77 days after, near the north end of Zanzibar, the drift being 9½ miles a day in a north-westerly direction, and with the southerly moonsoon.

On the eastern side of the Mozambique channel, during the north-east monsoon, the current cannot be relied on, as after cruising for three months (December, January, and February) between Nos Beh and Murderers bay, experience shows that no dependence can be placed on them, for at times the vessel had a north-easterly set of several miles, where only a few days after a south-westerly set of nearly 2 miles an hour was experienced.* Near the west coast of Madagascar, the current is, however, generally northerly, and north-easterly at the rate of a mile an hour, but off cape St. Andrew it often sets strong to the westward.† Nav. Lieut. Middleton, of H.M.S. *Flying Fish*, when at anchor off cape St. Andrew from the 1st to the 7th April 1875, found the current during the whole of that period setting West from 1½ to 2½ miles an hour; but two boats which were anchored between 8 and 9 miles S. ¾ W. from the ship experienced regular tides of six hours' duration.

In the middle of the Mozambique channel, to the southward of latitude 18° S., there is more often a northerly than a southerly current. H.M.S. *Lyra*, in the middle of November, in standing across from Mozambique to Madagascar found the current setting to the southward and eastward the whole way, drawing more to the eastward and decreasing in velocity as Madagascar was approached; on the coast of which no current was experienced. Near the coast of the main land, the southerly current prevails; but between Inhambane and Sofala, at a distance of about 50 miles from the coast, the current in the month of May has been running to the northward at the rate of 35 miles a day.

In the vicinity of Europa island, the current at times sets strong to the northward. Near the island in the middle of November, it has been found running to the north-west from 2 to 2½ miles an hour, causing strong tide rips, whirls, and in places almost a race. In 1875, the wreck of a large steam ship was lying on the south-east side of the island.

The current north of the parallel of Castle point generally follows the direction of the coast according to the prevailing monsoon, and its strength depends on the force of the winds: it is, however, often variable both in strength and direction, especially about the time of the change of the monsoons. Although the current in the Arabian sea sets to the south-west after the middle of October, off Magadoxa it is said to commence almost invariably with bad weather from the north-east about the second week in December, and to set to the south-west at a distance from the land a month earlier. It is also stated that the south-westerly current does not continue for a longer period than about three months; its strength generally being from 20 to 60 miles a day, though at times it exceeds this rate. H.M.S. *Lyra*, 3rd April 1875, experienced, between Formosa bay and port Durnford, a current setting S. 34° W. 88 miles in 24 hours, nine days only before the monsoon changed to the south-west.

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* Nav. Lieut. R. W. Middleton, H.M.S. *Flying Fish*, 1875.

† Nav. Sub. Lieut. E. H. Richards, H.M.S. *Magpie*, 1873.

The strong current which sets northward from the vicinity of cape Delgado is diverted to the eastward during the north-east monsoon on meeting the southerly current in the vicinity of Castle point; but during the south-west monsoon the whole mass of water sets to the north-eastward. This northerly current is commonly felt all along the coast to the north-east and through between cape Guardafui and Sakótra at the rate generally of 36 to nearly 100 miles a day,* and although its strength may be less near the close of the south-west monsoon, and at other periods capricious, yet it is occasionally felt strong as far as the parallel of 4° N. up to the first week in December; but as the time of the change of monsoon varies, so at other periods the current may set to the southward a month or more earlier, and thus no dependence can be placed on the exact time of change.

PASSAGES—Cape of Good Hope to Mozambique channel.—Vessels should make good easting, say longitude 37°, before passing to the northward of the 34th or 35th parallel. During the southerly monsoon vessels can proceed up any part of the Mozambique channel, but this route should not be chosen unless there is a certainty of reaching the destination before the close of the monsoon. During the northerly monsoon there is considerable difficulty in getting to the northward between latitudes 12° and 18° S.; owing to a succession of light N.E. winds and contrary currents, it is almost impracticable for any sailing vessel to make progress on the coast of Africa side, but on the Madagascar side slants of wind and more favourable currents will be found.

The most certain way, if not the quickest, for a vessel under sail to make the passage from the cape to the Comoro islands during the north-east monsoon, is to pass to the eastward of Madagascar. H.M.S. *Lyra* made the passage this way in February–March in 26 days. H.M.S. *Arab* left the cape on the 22nd November, experienced southerly winds through the Mozambique channel, and as far as the Comoro islands; then steamed through calms and light winds from north-east to Zanbibar, making the passage in 26 days.

When past the narrow part of the Mozambique channel the best course to proceed northward is westward of the Comoro islands, in order to avoid the proximity of Mayotta and the Geyser shoals; and if bound to Zanzibar advantage may be taken of the favourable current setting along the coast northward of cape Delgado, page 165.

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* H.M.S. *Nimble*, September 1st, 1873, lat. 7° 58′ N., long. 50° 11′ E., recorded the current at noon, N. 89° E. 114 miles. The lat. the preceding noon was 4° 12′ N. when the current was noted as N. 59° E., 97 miles.

Zanzibar to cape Guardafui.—The mail steam vessels from Zanzibar northward during the north-east monsoon, in order to avoid the strong southerly currents, are accustomed to steer E.N.E. until about 120 miles from the coast; then parallel to the land until in lat. 6° 0′ N., and then for the passage between Sokótro, and cape Guardafui.

Zanzibar to Seychelles.—During the early part of August when the S.E. trade blows strongest and reaches even the African coast, and the current is running strong to the northward, this passage is one of considerable difficulty, and even for steam vessels tedious. With steam power, however, the quickest way is to steam a direct course, taking advantage of any slight veering of the wind to assist with fore and aft sails.

A sailing vessel should leave the African coast in the evening so as to have the advantage of the wind veering from the land, and push across the northerly current on the starboard tack. Should the vessel reach as far north as the Equator, she will, when to the eastward of Seychelles, have but little difficulty in fetching the islands owing to the favourable current, which may be relied on, as far south as the parallel of 4°, and which reaches at times to the parallel of 6° S.

The northerly current has been found and lost at about 100 miles from the African coast, and in the early part of August, at the above distance eastward of Zanzibar, it was setting but little to the northward of West true, and continued so with little variation at the rate of one to 2 miles an hour until to the northward of lat. 6° 0′ S., in long. 49° 0′ E., from whence to the Seychelles to the northward of that parallel an easterly set of about three-quarters of a mile an hour was experienced.*

Zanzibar to north-west coast of Madagascar:—In this passage instead of sighting Comoro islands, the inshore route or that inside Lazarus bank, and as far south as Mozambique island, before standing across is recommended; for although somewhat a longer distance, a vessel will get smoother water, less adverse winds and currents, and after passing cape Delgado a southerly current of about 50 miles a day.†

When proceeding through the Mozambique channel to the southward during the southerly monsoon, follow the coast along past Mozambique island, so as to take advantage of the southerly current which will probably be found all along near the coast to the southward. When unable to make progress, either from the inconvenience or danger of hugging the land or night, stand over to the Madagascar shore, where the wind will probably be more from the south-east, and the vessel able to fetch cape Corrientes, and again gain the southerly current. For the set of the inshore current off several places between Mozambique and cape Corrientes, *see* pages 171, 172, 185, 189, 193, 199, and 203.

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* Nav. Lieut. R. W. Middleton, H.M.S. *Flying Fish*, 1875.

† Capt. Ward, H.M.S. *Thetis*, September 1875.

Johanna or Mozambique channel to Mauritius is at all times difficult to make with despatch. There are two routes:—*Firstly*, northward of Madagascar—Proceed sufficiently to the northward to avoid the current which sets westward round cape Amber; then work to the eastward, taking advantage of any slant of wind until able to fetch Mauritius on the port tack. This passage may be adopted between October and May, but it is uncertain, and the lee currents cause much anxiety when in the vicinity of any of the islands and reefs. H.M.S. *Orestes* made the passage in November-December in 22 days; she went as far north as 6° S., passing to the westward of Aldabra and to the south-westward of Alphonse; the wind was light and steady at E.S.E. until in lat. 16° S., long. 53½° E., when it drew to E.N.E. The vessel had a westerly current of about one knot an hour all the passage. The prize ship *Manuela* (a very fast sailer), took 30 days to make the passage this way in August-September.

Secondly, southward of Madagascar, which is the route usually taken, and should be adopted at all events between May and October. Work down the Mozambique channel as before directed, and get into the latitude of westerly winds, and then make easting in lat. 25° to 30° S., or farther to the southward according to the time of year. Off the south end of Madagascar E.N.E. winds, called "Fort Dauphin winds," will generally be met with, and sometimes, particularly about December or January, a westerly wind will blow for several days together between Madagascar and Mauritius, but this is not frequent.

CHAPTER VI.

CAPE CORRIENTES TO MOZAMBIQUE HARBOUR.

VARIATION IN 1878.

Cape Corrientes	21° 0′ W.	Quilimane river	17° 30′ W.
Cape Bazaruto	20° 0′ W.	Macalonga point	16° 0′ W.
Sofala	19° 35′ W.	Angoxa river	15° 5′ W.
Kongoni river	18° 10′ W.	Mozambique	14° 0′ W.

CAPE CORRIENTES.—The land about here is bleak and desolate looking, with many sand-hills and white patches, and when first seen makes like small islands. Cape Corrientes has a hill over it which may be seen at a distance of 30 miles. H.M.S. *Brisk* passed within one or 2 miles of the cape without soundings with the hand lead. The cape is not remarkable except for the black rock or islet off it, which is conspicuous. Owen places this islet in lat. 24° 7′ 30′ S., long. 35° 30′ 15″ E. The coast about the cape is bold and safe to approach, as far as is known, within a mile or less. The current nearly always runs to the southward from one to 2 knots an hour.*

COAST.—Cape Wilberforce is about 15 miles to the N.E. of cape Corrientes; the coast then runs in a northerly direction about 8 miles to Barrow hill point, which is the southern extreme of Inhambane bay. The coast from cape Corrientes to Inhambane is moderately high, visible at a distance of 20 miles or more; it is barren, being composed of sand hills, and at a distance has the appearance of chalky cliffs. Anchorage may probably be obtained in case of being becalmed, which would be of advantage to sailing vessels proceeding northward, on account of the strong southerly current which generally prevails.

BARROW HILL is placed by Owen in lat. 23° 45′ 30″ S., long. 35° 30′ 10″ E., on the south side of Inhambane bay; it is remarkable, being a white sand hill with a small mound or round tuft of bushes on its summit. The hill is most remarkable from the northward; its eastern side is darker and does not show so well; at a distance it makes like an island.

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* *See* Admiralty chart:—Cape Corrientes to Juba islands, including Madagascar No. 597; scale, $d = 1 \cdot 3$ inches.

LIGHT.—On Barrow hill point, about a mile eastward of Barrow hill, south of the entrance to Inhambane river, is a white dwelling and on its east side is a mast, from which is exhibited at 80 feet above the sea, a *fixed* white light, visible from seaward between the bearings of N.W. ½ N. and E. by S. ½ S. at a distance of 14 miles.

INHAMBANE BAY is formed by Barrow hill and the point extending eastward from it on the south, and by a continuous concave line of breakers on the west; this line of breakers extends from Barrow point, about 8 miles northward to the bar of the river.*

Anchorage.—The bay is apparently clear of danger, with soundings shoaling from 20 fathoms at 3 or 4 miles distance, to 7 fathoms at about a mile from the reefs. H.M.S. *Brisk* anchored in 7½ fathoms, fine sand, with Barrow hill bearing South, distant about 3 miles; Barrow hill point S. by E. ½ E.; and Barrow point S.W. This appeared to be a fair berth, and the holding ground good, but the swell was heavy. At night vessels should anchor in about 10 fathoms, with the light bearing S. by E., distant 3 miles; but there is anchorage nearer the shore in 6 or 7 fathoms, with the light bearing S.S.E. ½ E., more sheltered from southerly winds.

Pilots.—Vessels requiring a pilot should hoist the usual signal at the fore. The pilot service at Inhambane is good, nevertheless the pilot may not be able to get out the same day the signal is made, as the boats are small, and with a head wind it requires time for them to work out. Vessels under way waiting for a pilot should keep between Barrow hill and the entrance of the river.

Although vessels can anchor northward of Barrow hill with southerly winds, with northerly winds they should get under way. At night it is best to keep off and on to the northward of the bar, making due allowance for the current which sets strong to the southward. The vessel's position will be known by the bearing of Barrow hill point light.

The Reef on the west side of the bay is an extensives and flat, and has no passage through it except a shallow boat channel near Barrow point. Except at the top of high water, the sea nearly always breaks on these flats, which are dry in many places at low water; boats should not venture to cross them except towards high water, and not then if there is any swell. But if circumstances are favourable, of course a great saving of distance will be effected by crossing the flats in proceeding from the bay to the town.

The south shore of the bay, from Barrow hill point to Barrow point, has breakers all along it, with smooth water inside. When approaching the bay from the southward give Barrow hill point a berth of at least a mile, to avoid a reef running off in a north-easterly direction about 2 cables, upon which the sea generally breaks.

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* *See* Admiralty plan:—Inhambane river, No. 647; scale, $m = 1 \cdot 0$ inch.

From Barrow hill point to Barrow point is a line of white sand-hills, and cannot be mistaken. Barrow point is low, and has three or four cocoa-nut trees just within it, which are the first trees of the kind visible coming in past Barrow hill.*

INHAMBANE RIVER.—Although the entrance of this river is spacious and forms an excellent harbour for small vessels, the river is not considerable, being scarcely navigable for a ship beyond the town, and not more than 5 miles farther for boats.* The channel from the bar up to the town, a distance of about 14 miles, in a south-westerly direction, is not far from a straight course, except a short turn to the southward when within 2 miles of the town.

The Bar is nearly 4 miles from shore. On bringing the entrance to bear W.S.W., a white mark resembling the front of a chapel will be seen on the beach on Inalinga peninsula. This mark is called by the inhabitants the Pedestal, and beyond it on the summit of the hills there are two isolated trees. The Pedestal, kept midway between the trees bearing W. ¾ S., leads over the bar in 13 feet at low water. If there be a good breeze, vessels drawing less than 12 feet can enter without a pilot at high water neaps, or at half flood springs; the least water on the bar will then be 18 feet (and 23 feet at high-water springs). After crossing the bar the soundings will deepen to 4½, 5½, and 7 fathoms; then keep close along the extensive sand flats on the eastern side, which are always visible, and dry in places at low water, and so as to avoid the King bank on the north-west side of the channel. Vessels should anchor off the Pedestal and on no account proceed farther without a pilot, on account of the numerous sand banks between this anchorage and the town of Inhambane.

There is a heavy sea on the bar during southerly winds, at times rendering it unsafe even for boats, but they may generally cross safely by keeping in the channel.

A shoal, having 13 feet water on it, lies in the middle of the pass, at the entrance to the bar, but vessels drawing less than 13 feet, need pay no attention to it, but can proceed by the above directions. The pilots are well acquainted with its position, and pass northward or southward of it with vessels drawing over 13 feet.

There is anchorage outside the bar, but it is bad holding ground, and exposed to the force of the outset of the river.

Tides.—It is high water, full and change, at Inhambane at 4h. 15m.; springs rise 10 feet.

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* Owen.

Inhambane Town stands on a point on the right bank of the river, about 14 miles from the bar. It consisted of about 20 stone houses, 27 wooden ones, and 1,431 huts, with a population, in 1858, of 872 free men (including the garrison) and 3,122 slaves. There is a small fort, and the garrison consists of 120 soldiers, partly natives.* The natives in the immediate vicinity of Inhambane are a harmless set of people, but those more at a distance have the reputation of being treacherous, and are not permitted to enter the town.†

The mail packet calls here from the Cape, port Natal, and Delagoa bay every fourth week, and thence to Quilimane, Mozambique, Zanzibar, and Aden, and *vice versâ*. The mails are generally landed at Barrow hill point.

Supplies of cattle, poultry, fruit, and vegetables, are readily obtained at the town, and small supplies of good water may be got by rolling casks up to the wells in the town. Turtle are plentiful.—1846.

The Products are coffee, cotton, indigo, sugar, ivory, amber, copper, iron, and gold in small quantities; there are roots and trees which produce dyes, also the india-rubber tree ; oranges and lemons are in great abundance. The ivory is exported in large quantities to Goa *viâ* Mozambique.

Mafouroon Bank is the site of an island which has entirely disappeared, having been washed away by the force of the stream since Owen's survey of 1823, the river having altered a good deal since that time.

Hog Island, about 3 miles W. by N. from Barrow point, is covered with low bushy trees. Hog and Rota islands are on an extensive flat, dry in most places at low water, which appears to be separated from the eastern sand-flats by a boat channel.

INALINGA BAY is the mouth of the north branch of Inhambane river, and appears to join the latter in latitude about 23° 42′ S. It forms a fine landlocked harbour for small vessels, having a depth of 2 fathoms or more at low water, and has doubtless been used by slavers to escape the observation of passing cruisers.

COAST.—From cape Wilberforce to cape St. Sebastian, a distance of about 107 miles, the general trend of the land is N.N.E., but cape Lady Grey projects to the eastward of the meridian of those capes. This coast must be approached with caution when near the latitude of the Zambia shoal, hereafter described, but we are not aware of any other outlying dangers. This part of the coast has in general a sterile appearance, with sandy points at the entrance of the rivers, of which there are several of small size and not navigable; the first, called French river, is about 36 or 39 miles to the northward of Inhambane; another, farther north, is called Robber river. This would place French river in latitude about 23° 8′ S., but the information about this part of the coast is very limited.

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* Statistics, Portuguese Possessions, 1859.

† Commander Hope, R.N., 1845.

CAPE LADY GREY, in lat. 22° 56′ ¼ S., long 35° 38′ E., is a sandy bluff higher than the land inside it. When seen from the northward it forms like two mounds with a sandy beach. To the southward of the cape the land rises to a moderate height, covered with trees, and has a clean sandy beach. The extreme of cape Lady Grey is a low rocky cliff 70 or 80 feet high.*

COAST.—Immediately to the northward of cape Lady Grey the coast recedes to the westward, forming a curve to a point many miles to the northward; the land here is pretty even in its outline, about 150 feet high, and covered with dark bush.* Francis river has a high barren sand hill a little to the southward of it; this sand hill is in lat. 22° 51′ S.† At about 11 miles to the northward of cape Lady Grey there are several cliff faced hillocks of sand (Zambia cliffs) of a singular reddish colour, which are remarkable for this monotonous coast.*

ZAMBIA SHOAL.—In lat. about 22° 46′ S., long. about 35° 32′ E., the ship *Zambia*, in standing towards the coast, struck heavily on a coral shoal at 4 miles from shore, cape Lady Grey bearing S. by W. ½ W. about 10 miles, and the middle of a red sandy cliff (Zambia cliff) N. W. by W. The least depth obtained alongside, when aground, was 3¾ fathoms, the swell causing her to strike in more than her own draught, which was 19 ft. 8 in.; close outside the shoal there was no bottom at 20 fathoms. The steamer *Pearl*, in 1858, appears to have passed over the Zambia shoal at about 11 miles to the northward of cape Lady Grey, with the red sand cliffs bearing West (true), distant 3½ miles; bottom was seen, supposed to have 3 or 4 fathoms on it, but in endeavouring to extricate the vessel from danger there was no time to sound.*

COAST.—At 8 or 9 miles to the northward of Zambia cliffs the land becomes higher, with irregular sand hills dotted with bush, extending 2 or 2½ miles along shore in latitude about 22° 35′ S. These sand-hills are similar to Zambia cliffs, but the sand is of a more reddish colour.

About 22 miles to the northward of these sand hills there is a remarkable cliff head, in latitude about 22° 13′ S., to the northward of which the land is low, with a sandy beach.*

CAPE ST. SEBASTIAN,‡ in lat. 22° 6′ S., long. 35° 28′ 50″ E., is moderately high, of white sandy appearance, and forms a steep sandy point. The land over the cape is of considerable height, and may be seen at a distance of 30 miles. There are no soundings beyond 2 or 3 miles from shore. From this cape the land trends to the westward, forming a bay barred up with shoals between the cape and the Bazaruto islands.

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* F. Skead, Master, R.N., 1860.

† Commodore Nourse, R.N., 1823.

‡ *See* Admiralty chart:—Cape San Sebastian to Masangzani bay, No 648; scale, $m = 0 \cdot 16$ inch.

The BAZARUTO ISLANDS extend N.N.E. and S.S.W. for a distance of more than 30 miles. They are five in number, viz.:—Bazaruto, Benguerua, Xegine, Bango, and Marsha or St. Carolina; the first four of which bound the east side of Bazaruto bay.* The configuration of the land on the chart about the Bazaruto islands must not be depended upon, as in passing the bearings taken do not agree with the islands as there laid down. There does not appear to be any passage between the islands, except probably boat channels.

This is the site of the famous pearl fishery of Sofala, and hence those jewels are supposed to have been carried up the Red sea in the days of King Solomon.†

The eastern coast of the northern island appeared safe to approach within a mile or so; but, when standing in about 20 miles southward of cape Bazaruto, reefs were visible at 2 miles or more from shore.

CAPE BAZARUTO, in lat. 21° 31′ S., long. 35° 30′ E., is the northern extremity of the Bazaruto islands; it has a white sandy appearance, and is said to be steep-to, but there is a rock noted on the chart at half a mile or more eastward of the cape. A sandy spit extends from the cape a considerable distance to the north-westward. This spit, which covers at high water, is steep-to on all sides; the tides and currents run with much velocity when to the westward of the spit.

The soundings northward of cape Bazaruto are very irregular, and the bottom rocky and uneven, but no spot appears to have been found with less than 5 fathoms. The bottom in some places is sandy. H.M.S. *Persian* anchored to the north-west of the sandy spit, on a 7-fathom patch of sand, with the north extreme of Bazaruto S.E. ¼ S., and Marsha island S.W. by S.

With cape Bazaruto bearing S.S.W., the soundings were from 7 to 14 fathoms, sandy bottom; there was a great rippling of tide, apparently occasioned by a strong current setting to the eastward.

Bazaruto Island is the largest and highest of the group. It is about 16 miles in length and from 2 to 4 in breadth, and is an undulating range of sand hills of probably from 100 to 300 feet high, with but little appearance of vegetation. In 1855 there were 8 villages and 96 free inhabitants on this island.

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* Statistics of Portuguese Possessions, 1859.

† Owen.

Benguerua Island is next to Bazaruto in extent and height, but superior to it in fertility. In 1857 there were 5 villages and 260 inhabitants on this island, including a detachment of 15 soldiers. There is anchorage in 3 fathoms water, near the shore on the south-east side of the island, in lat. 21° 51′ S.[*]

Xegine Island is small, low, and covered with bush, and has very few inhabitants. It is in lat. 22° 0′ S., and in the same longitude as Benguerua.[*]

Bango Island is a small desert islet in lat. 20° 3′ S., and longitude 4 miles east of Xegine.[*]

Marsha or St. Carolina Island, in the middle of Bazaruto bay, is in lat. 21° 37′ S., long. 35° 20′ E. It has a commandant and a small detachment of soldiers, and is the principal establishment of the Portuguese between Inhambane and Sofala. Marsha is low, with a low sandhill on its north-east side, but well wooded and easily made out. On a vessel's approach, the Portuguese flag is hoisted in the centre of the island. Previous to the establishment of the Portuguese, this island was uninhabited, but in 1857 it had a population of 180, including slaves. There are two good wells of water on the island, but none to spare for shipping. There is also good building stone.[*]

BAZARUTO or PUNGA BAY, appears to have been but little examined at the time of Owen's survey. The anchorage between Marsha and Bazaruto is good, in 4 fathoms sand and stones;[†] a ledge of rocks, which uncovers at low water springs, divides this anchorage from another channel nearer the shore, where 6, 7, and 8 fathoms will be found.[*]

The entrance is from the northward, a little nearer to Bazaruto island than to the mainland opposite. There is anchorage to the southward of Marsha island in 5 to 7 fathoms.

H.M.S. *Rapid*, in 1862, after rounding cape Bazaruto, brought Marsha island to bear S.W. by W., and stood towards it on that bearing, anchoring in 22 fathoms, with the centre of Marsha island S. 50° W., and north extreme of Bazaruto S. 77° E.

Tides.—It is high water at cape Bazaruto, full and change, at about 4h. 10m., and the rise at springs about 12 feet.

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[*] Statistics of Portuguese Possessions, 1859.

[†] In the original this anchorage is described as between Marsha and the *main land*; but from the context, and from Owen's survey, I conclude that by *main land* it was intended to express Bazaruto.—A. de H.

COAST.—From Bazaruto to Sofala the coast is very little known or frequented, being out of the track of all passages, and may be considered the most dangerous coast of Eastern Africa.* From the Bazaruto islands to the Savey river the coast is called Buok. In hauling in for the land, the soundings decrease regularly on the bank to 8 fathoms, but vessels closing the land to the southward of Sofala must be careful of several dangerous shoals covered at half-tide stretching far out from the coast, and lying directly in the way of vessels coming from the southward and bound into Sofala with a westerly wind.

Govooro River empties itself into the bay of Moromone, in lat. about 21° 10′ S. The Govooro is hardly navigable for boats at its entrance, but becomes a fine river in the interior. It is said to be a branch of King George river, which falls into Delagoa bay.*

Savey River is nearly 15 miles southward of Boene island. The mouth of the Savey is narrow, with very little water, yet it is said to be a large river in the interior. On the southern side of the entrance of the Savey is the post of Mambony, where a Portuguese serjeant and six men were formerly stationed.

Inverarity Shoal is placed by Owen in lat. 20° 42′ ½ S., long. 35° 7′ E., at about 11 miles from shore, beyond which we have no account of it, and Owen's chart informs us that the position is doubtful. Much care is requisite in navigating in its vicinity, as the soundings are irregular, and there appear to be other shoal patches from 6 to 10 miles south of the assigned position of Inverarity shoal. H.M.S. *Rapid* having anchored over night in 5 fathoms at low water, in latitude and longitude by star-observation 20° 50′ S. and 35° 9′ E., proceeded on a north course the following morning, and after running about 6 miles, in depths varying from 7 to 4½ fathoms, the water suddenly shoaled to 17 feet. Here the vessel anchored in lat. about 20° 44′ S., long. about 35° 8′ E., and having sent boats away to sound, found the water deepen regularly, both eastward and westward, to 11 fathoms at 3 cables from the ship. The bearings of the extremes of land were N. 47° W. and S. 25° W.; but they were too ill-defined to be accurate.† The above patch may have been Inverarity shoal.

CHULUWAN ISLAND.—The north extreme of this island is about 27 miles southward of Sofala fort. The whole extent of the island is about 16 miles north and south, and as much east and west, but it is almost divided into two islands by a salt creek running east and west, and opening into the narrow circuitous channel which separates the island from the mainland.*

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* Owen. † W. F. Rowe, Master, R.N., 1862.

The northern entrance to this channel has the most water, and a deep bay well sheltered (but probably only for very small vessels). The northern entrance is called Chingani and the southern one Inhabacara.[*] Chuluwan island is low and sandy, but thickly wooded. All this coast is very low, mangroves in many places growing in the water, and there appear to be many inlets. The soundings abreast of Chuluwan are very irregular, consisting of sand patches; a bank of sand, which is very dangerous from being steep-to, extends along the island. The soundings shoal from 10 to 6 fathoms, and from 6 to 3 in very quick succession, and in some places 3 miles from the island.[†]

LIGHT.—On Chingani point is a small white tower with a mast on it, from which is exhibited at an elevation of 36 feet above high water, a *fixed white* light, visible between the bearings of S.S.E. and W. by N. ½ N. from a distance of 12 miles. Position, lat. 20°38′ 10″ S., long. 34° 50′ 25″ E.

To cross the bar of Chingani entrance, keep in 9 or 10 fathoms water, until the lighthouse bears S.S.W., steer for it on that bearing and round the point at the same distance. There is good anchorage in 8 or 9 fathoms just abreast the flagstaff. The least water found on the bank was 3 fathoms. There is a government pilot, and as the bar shifts, it is advisable to employ him.[‡]

Anchorage.—H.M. ship *Lyra* anchored with the north point of Chuluwan island about W. by S., in 11½ fathoms, low water, black sand. The flood tide set to the N.N.W., and the ebb S.S.E. 2 miles an hour. Mr. Jackson, master of the *Lyra*, makes the lat. of this anchorage 20° 35″ S. or 3′ north of the chart.

BOENE is a small, well wooded, uninhabited island, about 18 miles northward from Chuluwan, and about 12 miles southward of Sofala. There is a small grove of palm trees on the island. The channel, or rather mud creek, which separates Boene from the main is only covered at high water.[§]

SOFALA.—The fort is on the north side of the entrance of the river, in lat. 20° 10′ 42″ S., long. 34° 43′ E., on a small sandy peninsula. Large vessels should not approach this place nearer than 8 or 10 miles. Shoal water extends from both points of entrance to a distance of more than 3 miles,[§] and by the chart there appear to be shoal patches of 2½ fathoms, full 6 miles from shore, and 3-fathom patches a mile or two farther.[‖]

The land about Sofala is all low, but immediately in the vicinity of the river the land is a little higher and more irregular, with scattered tall trees, the adjoining coast being very low, with scarcely any trees. There are two remarkable high cocoa-nut trees, which appear to behind the fort, and are seen from a great distance.—1861. From the summit of one of the loftiest sand-hills the interior of the country had the appearance of a beautiful plain spotted with clumps of trees or small elevated mounds, but it proved to be an extensive morass covered with grass nearly 6 feet above the water, which is separated from the line of sand-hills by a narrow strip of dry land covered with jungle.*

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[*] Don Juliao de Silva.

[†] Captain Vidal, R.N., 1823.

[‡] Lieut. J. A. D'Avila, Portuguese Navy, 1875.

[§] Owen.

[‖] *See* Admiralty plan:—Sofala river and bar, No. 649; scale, $m = 1 \cdot 0$ inch.

The fort from a distance appears like a square mud building with three conspicuous cocoa-nut trees just to right of it; these trees show best on a N.W. bearing and are seen before the fort.†

Anchorage.—H.M.S. *Helena* anchored in 6¼ fathoms, sand (low water), in lat. 20° 16′ 25″ S., with the fort bearing N.N.W. 7 or 8 miles. This is the best anchorage for strangers, but in working out to sea the soundings were very irregular, shoaling suddenly at times from 10 to 5 fathoms, then immediately deepening, which is suggestive of great caution being required, considering the rise and fall is 19 feet.‡ H.M.S. *Persian* anchored in lat. 20° 10′ S., with the fort W. by N. ¾ N. distant 8 or 9 miles. H.M.S. *Gorgon* anchored in 6 fathoms, with the fort W. ¾ N. about 9 miles distant.

Bar.—The depth on the bar appears by the chart to be 9 feet, which, with a rise of 19 feet at springs, would give 28 feet, but the pilot objected to take H.M. brig *Persian* in. There were two channels divided by a long narrow shoal which dries at low water, but in 1859 the pilot stated that the northern channel was blocked up. On the southern side of the channel the Matus Grossa sand projects about W.S.W. 3 miles, and at low-water springs is dry almost to that extent.§ This bar should not be attempted by any but small vessels unless the channel be previously examined and buoyed.

Tides.—It is high water, full and change, at 3h. 30 m. at the port, and at 4h. 0m. at the anchorage off the river; ordinary springs rise 19 feet, equinoctial springs 22 feet.

SOFALA RIVER is more than 1¾ miles wide at the entrance; the south side is formed by the island of Inhancata, which appears as part of the main, being only separated by a narrow boat channel.* The river, although so wide, appears to have very little anchorage ground, being blocked up with sands which dry at low water.

The Town, which is built at the mouth of the river, is divided into two portions, one of which contains the Moors, and the other the governor and his subordinates and their slaves. The total population of Sofala in 1858 was 2,019, of which number 266 were Christians, and 96 Moors.* A short distance to the northward of the fort is a church, the walls of which are built of rough stones, while it is roofed with palm leaves.† The fort, which is old and very dilapidated, is garrisoned by about 80 half-caste Portuguese.

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* Owen.

† Robert Jackson, Master, H.M.S. *Lyra*, 1864–5.

‡ J. Pascoe, Master, R.N., 1844.

§ Captain Vidal, R.N., 1823.

Water.—There is a great want of water in the town, but it might be easily supplied by a pure stream about a mile distant. There is, however, a large cistern in the fort to which they have recourse.†

Products.‡—Sofala is said to have been in olden times the Ophir of Solomon, whence his fleets returned laden with "gold, almug trees, and precious stones;" it presents, however, no trace of former opulence, but merely a paltry fort and a few miserable mud huts.§ The trade is insignificant; a small quantity of ivory, beeswax, and ground nuts is sent to Mozambique in a six-monthly vessel, which calls at each of the southern settlements and leaves provisions for the garrison.

COAST.—About N.E. ¼ N. distant 20 miles from Sofala is Masangzani point, the shore between falling back to the north-west forms Masangzani bay. Masangzani point from a distance looks like an island with a fort on its south-west part, but on closing, what appeared to be the fort was a large clump of trees. Do not approach this part of the coast nearer than 6 fathoms water, as there are many outlying shoals, and the land is very low.‖

MASANGZANI BAY is large and shallow, open to the southward, and bounded on the east by Masangzani point, with the river of that name, otherwise called the Boozy, flowing into the northern part of the bay. This bay, not having been examined, must be approached with much caution, the 5-fathoms line extending as much as 8 or 9 miles from the nearest land. H.M.S. *Sappho* reports 3 fathoms at half tide, with Masangzani point N. by W. ½ W. about 12 miles; that distance, however, was probably over estimated. About 2 miles inland of Masangzani point the ground rises, and being covered with large trees, it resembles an island from a distance. At the mouth of the river there is a small woody island.*

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* Statistics of Portuguese Possessions, 1859.

† Mr. Lyons McLeod, 1857.

‡ Don Juliao de Silva, in an old manuscript, addressed to Captain Owen in 1824, gives the following account of the products of Sofala, viz.:—Precious stones and metals are said to abound in the vicinity of Sofala: topazes and rubies have been found in the river Mapuza; there is a rock crystal, and it may be inferred that diamonds and other precious stones are to be found; also gold, silver, copper, and iron. The gold is dug from the earth at a depth not exceeding 4 or 6 feet. The iron is manufactured by the natives into spades, hatchets, &c. Pearls are obtained by the natives going up to their waists in water; but they injure the pearls by roasting the oysters. Ambergris is found on the beach after storms. Amongst woods may be mentioned iron wood, ebony, box wood, and a species of white sandal wood; there are also many manna trees of good quality. Sugar cane, sweet potatoes, rice, cotton, and tobacco are cultivated.—This account of the rich products of Sofala must be accepted with reservation; it is, however, confirmed by Mr. Consul McLeod in his book on Eastern Africa.—A. de H.

§ Owen.

‖ *See* Admiralty chart:—Masangzani bay to Primeira islands, with plan of East Luabo river, No. 1,810; scale, $m = 0 \cdot 1$ inch.

SOFALA BANK extends more than 60 miles from the coast in the parallel of Sofala. Inshore, at the mouths of many of the rivers, the bottom is muddy, but the general soundings are fine sand, which becomes coarser at a distance from the land, and is very coarse near the outer edge, where it deepens suddenly.* The limits of the bank are not correctly ascertained, but the general trend of the verge of soundings is N.E. from the Bazaruto islands until within 40 or 50 miles of the coast of Quilimane, when it inclines more to the eastward. A careful line of soundings was run from the mouth of the Kongoni on a southerly course, when the depths increased pretty regularly to about 40 fathoms, in lat. 19° 50′ S., then soon off the bank, with no bottom at 224 fathoms, in lat. 19° 58′ S., long. 36° 30′ E. As a general rule, at night vessels may safely approach the western part of the bank to 15 fathoms, or the northern portion of the bank to 9 fathoms, if to the southward of the 18th. parallel.

COAST.—From Masangzani point E. by N. ¾ N., rather more than 38 miles, to a small river in lat. 19° 29′ S. the coast is slightly elevated, and bounded by a range of low sand hills, which in lat. 19° 38′ S. are remarkable, being thrown up to the height of 200 feet, in a number of sharp pointed hills resembling pyramids; these are conspicuous by being almost devoid of vegetation, whilst a thick jungle prevails around them. Several small rivers run into the sea along this part of the coast. From the river mentioned in lat. 19° 29′ S., E.N.E. for 48 miles to West Luabo river, the land is lower than that to the south-westward. Here there are also several rivers, but none of any apparent magnitude.*

The ZAMBESI DELTA† may be said to comprise the West Luabo, Melambe, Kongoni, East Luabo, and Muselo, from west to east, in the order in which they are named; the West Luabo, however, is not a branch of the Zambesi. The land is low all along the mouths of these rivers, nowhere exceeding 50 or 80 feet high near the sea, and the similarity of the appearance of the different rivers renders it difficult to distinguish them unless certain of the longitude. There are, however, some distinguishing features by which a careful observer may determine his position, as follows :—

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* Captain Vidal, R.N.

† *See* Admiralty plan:—Mouths of the river Zambesi, with views, No. 2,865; scale, *m* = 1 inch.

1st. The bearing of the extremes of land is one good guide, for when off the East Luabo at 6 miles distance the extremes of land were only 5 points apart, from N. by E. to N.W., but off the Kongoni the extremes of land were 8 points apart, from N.W. to N.E. easterly.*

2nd. The land about the Kongoni is not so high, nor the river so wide, as at the East Luabo, and when off the Kongoni the western extreme of land terminates in low sand-hills with a small piece of table land appearing like an island.*

3rd. The east side of East Luabo is lined with straight bare trees, which at a distance appear like cliffs terminating in a low point covered with trees to the water's edge.*

4th. The soundings admit of approaching the Kongoni within 3 miles with 4½ fathoms at low water, but the East Luabo cannot be approached so near. At 3 miles from the mouth of the Kongoni the sandy island with a mound and rough staff on it may be clearly seen.

5th. When abreast of the Kongoni the extensive bar of the East Luabo, called the Elephant shoal, which dries in places at low water, may he clearly seen breaking (except at high water in fine weather) at about 7 miles to the eastward.

6th. The entrance of the Kongoni between the breakers is generally visible to the eastward of the gap in the land when the latter bears about North.

The lead is of much assistance when making this part of the coast, the soundings decreasing from 40 fathoms at 45 miles to 20 fathoms at 25 miles and 7 fathoms at 4 miles distant, from which depth the soundings still decrease regularly to the bars of the rivers without any known outlying shoals, except the Elephant shoal, which may be considered to be the bar of the East Luabo.

CAUTION.—Various directions from time to time have been given for crossing the dangerous bars of the Zambesi delta, which should on all occasions be approached with the utmost caution. The large body of water which runs out of the different branches during the rainy season, and the continued heavy ocean swell, so alter the position of the several bars, the banks, direction and depths of the channels, and even islands are formed and washed away, that no special directions can be given. The seaman without local aid will act wisely by placing boats or beacons without and within the bar should he wish to enter any of the mouths. From a vessel at anchor near either of the bars, the channel will probably be seen from aloft, and boats may be guided to it by signals.

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* J. A. R. Petch, Master, R.N., 1860.

WEST LUABO RIVER.—Ord point, on the eastern side of entrance to this river, is in lat. 18° 55′ S., long. 36° 0′ E. Here the trees commence and thickly clothe the eastern bank of the river. From Ord point, Kirk point, the western point of entrace, bears S.W. by W. ½ W. 1½ miles. This river may be known by a range of hummocks on its eastern side, and very low land to the south-west. The West Luabo has frequently been taken for one of the mouths of the Zambesi, but it has been ascertained to have no communication with that river, unless it be by small creeks, for canoes only. It pursues a zig-zag course for about 20 miles with not less than 2 fathoms in the channel, above which it does not appear to have been sounded. The Thornton river runs into the West Luabo from the westward, at about 25 miles from its mouth.

The Bar extends more than 2 miles from the shore, with from 3 to 6 feet at low water, and 16 or 17 feet at high water springs. To enter the river observe a quoin-shaped clump of trees about 1¼ miles inside the western point of entrance. Bring this clump to bear about N. by W. ½ W., which will lead over the bar in the deepest water, from 13 to 15 feet at three-quarters flood. When within the bar keep near the western breakers, as the deepest water is found on that side; and when well within the western point of entrance, steer over towards the eastern point.*

Tides.—It is high water, full and change, at 4h. 30m.; springs rise from 12 to 14 feet. The stream of ebb and flood runs regularly in the river from 1½ to 2 knots.*

MELAMBE RIVER.—The mouth of this river lies 6 miles eastward of the West Luabo, and 3½ miles westward of the Kongoni, of which river it is the western mouth. It is reported to have been the chief place of resort in former times for vessels engaged in the slave trade, but at present its mouth appears to be choked with sand-banks; it has not, however, been carefully examined or sounded.*

KONGONI RIVER.—The mouth of the Kongoni is 9 miles eastward of the West Luabo, and about 8 miles westward of the Zambesi or East Luabo. The Kongoni extends 15 miles in a not very winding course to the N.N.E., with depths of from 2 to 5 fathoms; it then divides into two branches, the western one of which is supposed to communicate with the West Luabo, and from the eastern one a narrow channel about 3 miles long, with 2 fathoms at low water, runs into the Zambesi.*

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* F. Skead, Master, R.N., 1861.

It was by this channel that the expedition under Dr. Livingstone entered the Zambesi, and the observation of all those who have examined these rivers led to the conclusion that the best method of entering the Zambesi was by the Kongoni. Were it not for the connexion with the Zambesi, the Kongoni branch would not be of any importance. There is a boat channel within the bar which communicates with the Zambesi 3 or 4 miles from the mouth of the latter, but at times this channel is blocked up.*

Vessels proceeding to the anchorage off the Kongoni should make the Zambesi first, as its entrance is more easily discernible from its much greater breadth.† Having made the Zambesi, steer to the westward along the coast, keeping in 4 or 5 fathoms, until the Kongoni is seen. The Kongoni may be known by a gap in the land formed by the river, by the opening in the surf, and by the extensive shoal ground and breakers extending from the Zambesi mouth about 7 miles to the eastward of the Kongoni, and by the flagstaff bearing the Portuguese flag on the west point of entrance.

Anchorage.—The most convenient anchorage for communicating with the shore, is with the gap in the land bearing about North. The *Brisk* anchored in 4¼ fathoms, sand, at low water, but except in fine weather vessels should lie farther out, say in 7 fathoms at 4 or 5 miles from shore. The current generally sets to the westward, causing ships at anchor to lie broadside to the usual S.E. wind, and consequently to roll a good deal.

Bar.—The sand banks extend in a S.S.W direction, and for a distance of upwards of 1¾ miles from the flagstaff on the west point, where on either side they are connected by a bar less than 2 cables across, with 6 feet on it at low water. The channel over the bar of the Kongoni—1873—lies in a N.W. by N. direction; the shallow part is narrow, and when over it the water deepens from 13 to 25 feet; vessels whose draught admit crossing under favourable circumstances, when over the bar, may anchor in safety or proceed into the river to the anchorage in about 4 fathoms, above the flagstaff on the western shore.

The best time to enter the river is at three-quarters flood, and for coming out the top of high water, or first of the ebb, but not after the ebb has begun to make strong. At all times be careful to keep to the eastward, as the current usually sets a knot or more to the westward. At low water the surf breaks right across the bar, and the entrance cannot be distinguished; but after the tide has risen a little there will be intervals without breaking in the channel, but on each side of the channel the break will still be continuous.

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* *See* enlarged plan of Kongoni entrance, on sheet No. 2,865.

† F. Skead, Master, R.N., 1861.

This is the time to send a boat to anchor outside the bar in about 3½ fathoms, an officer aloft directing her course from the ship to starboard, port, or right a-head by means of flags until in the fairway off the bar; when at anchor this boat should have her mast up and a staff for a topmast with a flag flying, the crew may be taken out and back to the ship. Then if this beacon boat, fairway channel, and ship are in line, send the boat which is to enter the river at such a time as to be off the bar at three-quarters flood, and let her go in, keeping the beacon boat and ship in one. If a beacon boat cannot be sent away as above, at all events station an officer aloft, and direct the boat's course by flags, as the channel can clearly be seen from aloft, whilst the boat in the trough of the sea can distinguish nothing but the ship's mast.

Observe also that at the distance the ship lies, the colour of flags cannot be distinguished; therefore preconcerted signals should be established such as the starboard and port flags being worked at the fore and main, and the right a-head flag at the mizen. If the vessel has no mizen mast a flag both at the fore and main will answer for right a-head.

Tides.—It is high water, full and change, at 4h. 30m.; springs rise from 12 to 15 feet. The ebb tide at springs runs strongly, 4 to 4½ knots at the river's mouth, and at low water the river is generally fresh. During the rainy season, October to February, the river often overflows its banks, rising 2 feet above the level of the surrounding country.

The ZAMBESI, sometimes called East Luabo or Katrina, is the main outlet of the great Zambesi river. First Bluff point, on the western side of entrance is so called from high straight trees very close together, and from it Hyde Parker point on the east side of entrance bears S.E. distance 1¾ miles.*

Bar.—The shallow water around the mouth of the Zambesi extends in a southerly direction nearly 4 miles from the west side of entrance. The sand bank from the east point of entrance projects to the south and westward across the mouth of the river leaving a narrow passage about a quarter of a mile wide between it and the bank on the western side. The sea at low water breaks completely across the passage, at which time a great portion of the banks are uncovered, and in places 7 or 8 feet above the water.† In fine weather, at high water, boats may find the passage, but there is little water, and in places a bad race, so that caution is requisite.† In the month of June two days have been occupied without finding a practicable channel across the bar, which is said to be impracticable during the south-west monsoon.* The depth on the bar at low water neap tides is about 9 feet, and at low water springs 4 feet.† Discoloured water is seen for a long distance from shore.

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* *See* plan of East Luabo river, on sheet No. 1,810.

† Commander Hyde Parker, R.N., 1849.

Tides.—It is high water, full and change, at 4h. 30m.; springs rise 12 to 15 feet.‡ Commander Hyde Parker and Lieutenant Hoskins give the rise and fall 20 or 22 feet, but there is nothing in the contour of the coast to render such tides probable, and except at Sofala, the tides on this coast nowhere exceed 15 or 16 feet.

The influence of the tides is felt at 25 or 30 miles up the river; above this distance the stream in the dry season runs from 1½ to 2½ knots, but much stronger in the rainy season. The river water is fresh down to the bar with the ebb tide, and in the rainy season it is fresh at the surface outside.§

INLAND NAVIGATION.—The Zambesi is by far the largest river on the East coast of Africa, being navigable for 300 miles, at which distance there is a small rapid: above this rapid is another reach of 300 miles, with sand, but no mud banks in it, which reaches to the foot of the eastern ridge.‖

Proceeding up the river between 2 and 3½ miles from First Bluff point is an island, the passage is on its eastern side; abreast of this island a boat channel branches off to the westward, and joins the Kongoni. In the rainy season at full and change of moon, the river frequently overflows its banks, but the waters do not remain up more than three or four days at a time. The huts on the banks of the river are built on piles, and at these times the only communication is in canoes. The first village is about 8 miles up the river on the western bank, and is opposite the fork where the Muselo, the eastern mouth of the Zambesi, separates from the main stream. This village is extensive, and there is a large quantity of land in cultivation around it. Calavances or beans of different sorts, rice, and pumpkins are the principal products, also wild cotton, apparently of good quality. At this village there is a very large house, mud built, with a courtyard which had probably been used as a barracoon for slaves, several large cargoes having been exported from this river.§

The banks of the Zambesi for the first 30 miles are generally thickly clothed with trees, with occasional open glades, and many villages. At one village, about 17 miles up, on the eastern bank, a great quantity of excellent peas are cultivated; also, cabbages, tomatoes, onions, &c.; it is surrounded with plantations of banana and plantain trees. Above this, there are not many inhabitants on the western bank, although it is the higher of the two, and abounds in cocoa-nut palms, whilst the eastern bank is sandy and barren. The banks of the river continue mostly sandy, with few trees until within 20 miles of Maruru; here is the large plantation of Nyangue and the country is more populous and better cultivated.

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* J. A. R. Petch, Master, R.N. 1860.

† Lieutenant A. H. Hoskins, R.N., 1849, and R. Cooke, Master, R.N., 1859.

‡ F. Skead, Master, R.N., 1861, and R. Cooke, Master, R.N., 1859.

§ Commander Hyde Parker, R.N., 1849.

‖ Dr. Livingstone, 1856.

At 3 miles from Maruru is the village of Mesan, close to which commences the Mutu canal, which communicates with Quilimane river in the rainy season, but is dry at other times. In October the bed of the canal was 30 or 40 yards wide, and at least 16 or 17 feet above the level of the Zambesi. The rise of the river here in the rains must be nearly 30 feet by the marks on the banks. The place where the Mutu canal commences is called Boca do Rio, and is about 70 or 80 miles from the mouth of the Zambesi. The voyage up the river occupied seven days, but only two and a half to return.*

MUSELO RIVER.—This is the eastern outlet of the Zambesi; it branches off about 7 miles from the mouth of that river, and runs into the sea between 8 and 9 miles eastward of it. This outlet is impracticable, even for boats in ordinary weather, the depth of water on the bar at 3½ miles from shore being from 3 to 4 feet, with a heavy surf on the only spot where a channel appears probable. The sea breaks right across the river's mouth. Inside the bar, the depths vary from 2 to 5 and 1½ fathoms to the junction with the Zambesi.

COAST.—On the north-east side of the Muselo there are sandy cliffs, beyond which, in latitude about 18° 40′ S., there is a bluff or cape of low white sand hill, with a piece of flat land, which makes like an island to the north-east of it. From the Muselo, to Quilimane river is about N.E. ¾ E. distant 56 miles; in this space there are 3 or 4 rivers, one of which in lat. 18° 34′ 30″ S., long. 36° 29′ E. is large, with an island at its entrance, dividing the river into two branches. The general soundings along this part of the coast are 4 fathoms at low water, 3 miles from shore,† and from 6 to 9 fathoms at 5 or 6 miles from shore, except off the entrance of Indian river, where there is a bank of muddy sand, with 4¾ fathoms on it.‡

From the Zambesi north-eastward the land is very low, being scarcely ever seen from the deck in 10 fathoms water; it is a little higher about 8 or 10 miles S.W. of Indian river, and again at Indian river, at which places it shows in clumps of trees. A little to the southward of Indian river there are some sand cliffs separated from the beach by a long lagoon;

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* Commander Hyde Parker, R.N., 1849.

† Owen.

‡ J. D. Milne, Master, R.N., 1847.

these cliffs are remarkable with the morning sun shining on them.* The current along this coast is generally S.W. one knot an hour.

Lily Bank.—Lat. 18° 35′ S., long. 36° 42′ E., is the position assigned to the bank upon which H.M.S. *Lily* struck in 1843. Whilst standing to the W.S.W., 13, 8½, and 6½ fathoms were obtained in quick succession; the *Lily* then touched, and deepened the soundings conversely whilst heading to the E.S.E. Land was reported from the mast head at the same time that the soundings were taken. An American trader reports finding 6 fathoms in about the same place,† but the exact spot does not appear to have been determined, as the assigned position has been crossed and recrossed by H.M.S. *Orestes* in 1851, without finding soundings.

Indian River.—The mouth of this river is S.W. by W. ¼ W., 13 miles from that of Quilimane.‡ There is a large open space inside the bar from which it branches off in two directions. The eastern branch, called the Olinda, was examined by the boats of H.M.S. *Grecian*, which ascended 12 miles, carrying from 10 to 5 fathoms. The western branch called the Masangzani, is by far the larger, and was explored for 30 miles with depths of 10 to 8 fathoms. There is also a boat passage into Indian river as well as the ship channel.§

Indian river may be known by a remarkable clump of trees about 1¼ miles to the northward of it, which, when bearing to the westward of North, assumes the form of a camel. For a short distance on each side of the entrance of the river there are no tall trees, particularly on the southern side.‖ The entrance of the river shows well on a N.W. by W. bearing. We have no information as to the depth on the bar or directions for entering; but Captain Vidal states that the brig *Singapore* in 1822 ascended the river about 16 miles, and the least water she obtained was 2 fathoms. Shoal water, however, appears to extend a considerable distance off the mouth of the river.

The COAST between Indian river and Quilimane has several low sand hills and reddish looking patches, and about 2¼ miles north-east of Indian river there is a low but remarkable bluff, which makes like a point. The soundings between Indian and Quilimane rivers are regular.

QUILIMANE RIVER.—The entrance to this river is between Tangalane or Olinda point on the north-east, and Hippopotamus point a mile south-westward. The land on both sides is low, sandy, and covered with trees or jungle, the south-west side being rather the higher with an old barn on it. The white light-tower and flagstaff on Tangalane point are visible some time before the land, which may be safely skirted at a distance of 5 or 6 miles, the outline of the coast being then clearly distinguishable, but as the current is strong and uncertain in the neighbourhood, caution is necessary. The entrance of the river is conspicuous when open on a N.N.W. bearing, the river being wide and nearly straight for 10 or 12 miles; when abreast of it no land will be visible from the deck between the points of entrance; but from aloft the island, which is about 4½ miles inside the entrance, will be seen.*

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* W. J. Olive, Master, R.N., 1847.

† Commander Baker, R.N., 1843.

‡ Captain Vidal, R.N., 1823.

§ G. A. Stabb, Master, R.N., 1852.

‖ T. J. Whillier, Master, R.N., 1851.

LIGHT.—The light-tower on Tangalane point exhibits, at 52 feet above the sea, a *fixed* white light, visible in clear weather from a distance of 8 miles. Vessels should not attempt to sight the light at night. The lighthouse is in lat. 18° 1′ 24″ S., long. 36° 58′ 20″ E.

Buoys.—The entrance of the river is marked by seven buoys, namely, Tangalene spit buoy, black, in 3½ fathoms, with Tangalene flagstaff bearing North; Hippopotamus point buoy, red, in 3 fathoms, with Tangalene flagstaff bearing E. by N. nearly; and Militao bank buoys, five in number, placed in 9 feet on the west and south-west edges of Militao bank. Vessels after passing the bar must steer towards Tangalane point buoy, keeping it on the starboard bow. When abreast of it, alter course for Hippopotamus buoy, and pass a cable to the north-east of it; then steer in for the west bank of the river, and keeping that shore on board, leave all the Militao bank buoys on the starboard hand.†

Anchorage.—A good berth is in 7 fathoms, at about 5 miles from shore, with Tangalane light-tower N.N.W. ¼ W. or Hippopotamus point about N.W., which is as close in as a large vessel should venture. This is a convenient position for directing a boat across the bar by the ship channel; but should the boat return by the boat channel she will have much difficulty in regaining the ship during the south-easterly winds. If it is proposed to communicate with the shore by the boat channel, it will be better to anchor in 7 fathoms with Hippopotamus point about North.

The Bar extends about 3 miles from shore, but is liable to change of position at the periods of heavy rains. There are three channels across the bar, first, the boat channel, which runs close along the shore seaward of Hippopotamus point; being inside the breakers, this channel is nearly always smooth, and can be used by a boat when a ship channel cannot. The second or ship channel is that which leads directly in. The third or eastern channel cannot be seen by a vessel from seaward, as it runs between and parallel to the lines of breakers. The eastern channel should not be used by vessels, owing to its liability to shift; but the Arab schooners use it when the sea breeze sets in before they can cross by the ship channel, which they prefer, but which they say has from 3 or 4 feet less water than the eastern channel.

To enter by the boat channel steer about N.W. from the anchorage for the south clump of cocoa-nut trees having a hummock near it, and follow along the breakers off the western shore with the flagstaff on Tangalane bearing about N.E., passing Hippopotamus point at about a third of a mile. The boat channel appears to be the safest for going out, unless it be with southerly or S.W. winds, when it should not be used; at other times it is considered much the safest, being sheltered by the surf on the western part of the bar.

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* *See* Admiralty plan:—Quilimane River No. 650; scale, $m = 1 \cdot 0$ inch.

† Lieut Jose d'Avilia, Portuguese Navy, 1876.

Ship Channel.—At high water, ordinary springs, there is a depth of 21 feet on the bar, but no vessel drawing more than 12 feet should attempt to cross, and it is difficult with that draught. The only days the crossing can be attempted is, at full and change of the moon and the three days following. Sailing vessels drawing 8 or 10 feet can always pass inward.†

A Government steam vessel may be had for towing over the bar and in the river by making the usual signal indicated in the commercial code by the flags P.N., or a square flag below the national flag.

Directions for entering.—A stranger should not attempt the bar at high water, as the shoals do not show at that time; the best times to cross are at three-quarters flood, and one-quarter ebb. Skirt the breakers in 5 fathoms until the flagstaff on Tangalane point bears North, and the centre of the river's mouth N. by W.: steer N. by W. allowing for the set of the strong current which may run to the south-west outside the bar at the rate of 3 or 4 knots. When the line of outside breakers is passed, the channels will begin to show by the smoothness of the water. By altering course half a point to port or to starboard, a shoal patch which lies in the fairway, and has 4 or 5 feet less water than the channel, will be avoided. After crossing the bar, the water deepens to 3½ and 4 fathoms in the Well, where vessels may anchor. The water thence deepens to 7 or 8 fathoms near Tangalane point.‡

When midway between the bar and Tangalane flagstaff keep a little more to the eastward, to avoid the shoals which will show extending off Hippopotamus point, and by keeping the flagstaff a little on the starboard bow, the bank, which extends from Tangalane point and is steep-to, will be avoided. When the flagstaff and huts bear E.S.E., alter course sharply to W. by N. for the inner part of Hippopotamus point, on the north side of which a vessel may anchor in 6 fathoms, clay, abreast of the Indian Kraal and opposite the mouth of a small creek. Or the vessel may anchor in

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† The information respecting Quilimane river is abridged chiefly from the remarks of Mr. James Taylor Sutherland, Master of the British brigantine *Glenesk*, 1875.

‡ H.M.S. ship *Lynx* in July 1877, crossed the bar under favourable circumstances at about a quarter ebb, with Tangalane flagstaff bearing N.b.E., and the least depth of water was 3 fathoms.

5 fathoms, about a mile northward of Tangalane point, near the eastern side of the river, and not far from the mouth of a small creek.

From the anchorage near Hippopotamus point, skirt the western bank of the river at about 2 cables distant, except when abreast a mangrove swamp on the western side at 3 miles above the Indian Kraal, where the shore is low, and where a shallow bank extends a short distance. When past the flagstaff, which stands nearly opposite the factory, the river can be crossed, and the vessel may anchor in 4 fathoms, off the town of Quilimane. From Hippopotamus point to Quilimane depths of 2½ to 3½ fathoms (low water) will be found.

Pilots.—There is no certainty as to pilots, as in July 1877 none could be obtained, though at times a captain of one of the Arab schooners acquainted with the port may be induced to pilot a vessel over the bar for the sum of 15*l.*, which sum includes all expenses; but the services of such a pilot can seldom be obtained.

The signal man at Tangalane point will, after the vessel has crossed the bar, undertake to pilot her to the town (12 miles from the entrance); but the services of a pilot after a vessel of light draught has entered the river are not necessary.

Caution.—The channels are said to be constantly shifting. The breakers are a better guide than either compass or chart. The signals from the shore directing the ship's course are not to be depended upon. Which ever channel may be thought advisable, much precaution is necessary in crossing the bar, as the breakers are so treacherous, that a solitary wave at times comes in and breaks heavily when the water on the bar appeared smooth immediately before. Many lives have been lost, amongst others a native pilot of experience and all his crew perished ; on another occasion the barge of H.M.S. *Cleopatra* was capsized, and in 1856 a boat of H.M.S. *Dart* was lost, and the master commanding, Mr. Maclune, Lieut. Woodruffe, R.M., and the whole boat's crew were drowned. The method of directing a boat from the ship from aloft may be adopted with advantage here, but large flags must be used, as a large ship will lie so far off as to be hull down.

It is better to ascertain the time of high water by observation than to rely upon the establishment, as the tides are irregular. When returning from the town to the ship outside the bar it is well, if late in the day, to sleep at Hippopotamus point, and go out early in the morning ; you can then walk round the point so as to examine the state of the bar before starting. At the farm just outside the point there is a creek with good landing at all times of tide, and a house on shore where you may obtain permission to sleep, but it is preferable perhaps to anchor in the stream and sleep in the boat on account of the mosquitoes. Several tracks of hippopotami were seen on the beach.

The time for crossing the bar, like most others, is for either channel three-quarters flood for entering, and high water or the first of the ebb for going out; but with easterly or south-easterly winds, if high water is towards the middle of the day, and you have but little local knowledge, it is recommended to go out by the boat channel early in the morning at last quarter ebb, when the western breakers of the bar define the channel, as by far the smoothest time is the early morning, and it may not be advisable to wait for high water, because the sea breeze will then have set in fresh.

Directions for leaving.—Quilimane is an inconvenient place to put to sea from, as loaded vessels can only cross the bar at spring tides, which occur at 4h. 20m.—dark in the morning, and the sea breeze blowing in the afternoon. A vessel, leaving the anchorage off the town of Quilimane, should proceed with the land breeze down the river early in the morning and in the track before stated. She should anchor near the east side of the river, abreast a creek, about a mile north of Tangalane point; this is a convenient stopping place, and is used by the Arab traders. Weigh with the land breeze on the following morning so as to be on the bar at high water, and with daylight enough to see the marks. More than usual care and prudence is requisite at this time, and a slight error may result in the loss of the ship and crew.

Quilimane Town is on the eastern bank, 12 miles from the mouth of the river. In 1875 the population of Quilimane, exclusive of Government officials, consisted of 15 or 20 Europeans (Portuguese, French, and Spanish), 25 or 30 half caste soldiers, and several thousands of blacks, half of whom are said to be slaves. The climate is unhealthy.

The principal imports are fire-arms and cotton goods from Bombay, knives, toys and beads. The exports are ivory, skins, beeswax, sesame seeds, nuts and cocoa-nut husks. The trade is rapidly increasing. A considerable trade in slaves was formerly carried on.

Provisions are scarce and dear; all except fowls and vegetables being imported. Water is obtained from wells dug in the sand; it is of bad quality and scarce.

The mail packet calls at Quilimane from Table bay, port Natal, Delagoa bay, and Inhambane, about once a month, and thence to Mozambique, Zanzibar, and Aden, and *vice versâ*.

Tides.—It is high water, full and change, at 4h. 20m. Ordinary springs rise 10 or 12 feet, and equinoctial springs rise 15 feet. At spring tides the streams run at the rate of 5 or 6 knots; the flood is said to extend 60 miles up the river.

Winds and Currents.—The current generally sets to the S.W. from one to 2 knots, causing vessels at anchor off the bar to lie broadside to the swell and roll considerably. Whilst lying off Quilimane in October, the winds varied from S.S.E. to E.S.E., and blew throughout the night, only lulling in the morning; but this is unusual, a land wind generally setting off at night.

The heaviest rains occur in January and February, accompanied by much lightning.

COAST.—About 8 miles north-eastward of Tangalane point are three conspicuous cocoa-nut trees on the higher part of the land, which appear like three masts; there are one or two groups to the northward of this. About 14 miles from Tangalane point is the first patch of casuarina trees, the lofty trees between this and the Quilimane being all palms or cocoa-nut.* The coast is generally low and sandy, with jungle in the background.

The soundings along this coast decrease regularly on approaching the land, but there is a rocky bank in about lat. 17° 55′ S., long. 37° 19′ E., at about 13 miles from shore. The *Brisk* passed over this bank when standing to the southward, obtaining 7 fathoms least water, the soundings subsequently deepening to 10, 15, and 20 fathoms, rock. The bank could not be examined as it was night time, and blowing strong.

There are five or more rivers between the Quilimane and cape Fitzwilliam, three of which, namely, the Mecusa, Licongo, and Mariangoma, are not far from each other.

The MECUSA is about 25 miles north-eastward of Quilimane. A patch of casuarina trees forms its western point of entrance, and a bluffish point the eastern one. The entrance appears about half a mile across, and the river is only navigable for boats.*

The MARIANGOMA is next north-eastward of the Mecusa, and is more distinguishable from seaward.* It is about N.E. by E., 30 miles distant from the Quilimane. There is a settlement on the north side of this river, about a mile from the entrance.† On the north-east side of the Mariangoma there are white sandy hills without trees for some distance, but on the south-west side no sand hills.

MAZEMBA RIVER is about 12 miles to the south-westward of cape Fitzwilliam, and is tolerably safe for entering in a boat. To enter, keep the northernmost high trees on the east side of the river bearing North; this course will lead in safety between the two spits which extend to seaward from either side.‡ There are 3 fathoms water (whether this is at high or low water we know not) in the entrance, and 6, 5, and 4 fathoms for 30 miles up the river. H.M.S. *Mutine* captured two large slavers at that distance from the mouth, and reports it to be the easiest river of access on this part of the coast.

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* T. J. Whillier, Master, R.N., 1851.

† Vidal.

‡ B. Renaud, Master, R.N., 1845.

There is a channel from the Mazemba to the Tejungo, passing to the northward of the island which separates the two rivers. Several streams flow into the Mazemba, with entrances so wide that it is not easy to distinguish which is the main river. The river abounds with hippopotami. Care is recommended in bartering or otherwise communicating with the natives; they are generally armed, some with muskets, and are not to be trusted.*

Supplies.—Plenty of stock can be obtained by barter from the natives at the entrance of the river, but no information about fresh water was obtained.†

TEJUNGO RIVER.—The shoal water extends a considerable distance off this river. H.M.S. *Persian* anchored in 5¼ fathoms, at 5 miles from shore. At the time of the *Persian's* visit there was too much surf to enter the river. Between the Mazemba and Tejungo the land is rather high, of a hummocky appearance, with two remarkable trees on its extreme decline eastward; these trees stand right between the two rivers. The entrance of the Tejungo is more perceptible than that of the Mazemba; a low point covered with trees forms the south-west point of entrance, and cape Fitzwilliam stands out boldly to the eastward of the entrance.

The town called Monega is about 7 miles up the Tejungo. The chief lives at Monega, but at the time of H.M.S. *Hydra's* visit in 1855 he did not appear, and the people, who were all armed with knives and spears, did not seem well disposed. There are no Europeans here.

Capt. Thos. Le H. Ward, H.M.S. *Thetis*, Aug. 1875, writes :—The only river known as the Quizungo, is that marked on the chart "Tejungo;" the river has a fine deep entrance running nearly north and south between two lines of breakers about half a mile in length and a quarter of a mile in breadth, 3 fathoms was the least water obtained on the bar, which did not break as it was crossed, it being then nearly low water. Inside the bar there is a land-locked anchorage for vessels of any size in 8 or 9 fathoms. The river, however, very soon becomes shallow, being navigable for some 20 miles from its mouth for dhows and boats only. The river, like the rest on this coast, is lined with mangrove bushes near its mouth, but in proceeding up there is a fine open country with numerous indications of large game.

CAPE FITZWILLIAM, in lat. 17° 10′ S., is a remarkable bluff composed of yellow earth cliffs, with a few rocks around them on the beach. This cape and cape Edward are the most remarkable points along this part of the coast.

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* Commander H. G. Morris, R.N., 1854. † B. Renaud, Master, R.N., 1845.

Cape Edward is a remarkable bluff formed of red earth cliffs, with a sandy beach and a few rocks at the base of the cliffs. This cape is 6 miles eastward of cape Fitzwilliam, the land between being very low, with apparently a small creek about midway.*

COAST.—From cape Edward eastward to a point in long. 38° 55″, a distance of about 37 miles, the coast is nearly straight. Between these two points there are two inconsiderable streams; and to the north of the point is the mouth of the river Marooani.†

From the latter point to Macalonga point, a distance of about 12 miles farther on, the coast is rather low, composed of sand hills, with a few scattered trees, and forms a bay between the points.

MAROOANI RIVER is about N. by E. ½ E. 12 miles from Fogo island. The bar of this river in 1875 was found impracticable for a gun boat. On the north side of the river, within its mouth, is a red cliff which may serve to distinguish it.‡

PRIMEIRA ISLANDS and SHOALS.—The Primeira and Angoxa islands and shoals are on the outer edge of a coral bank, on the verge of soundings. The channels between them and the main are good, having from 7 to 11 fathoms, the deepest water being on the island side of the channels.*

PANTALOON SHOAL.—The centre of this shoal is in lat. 17° 44′ 15″ S., long. about 37° 58′ E., its extent being 1½ miles east and west, by three-quarters of a mile north and south, with depths varying from 10 to 3½ fathoms, which was the least found at low water. There are several knolls with from 4½ to 5 fathoms on them.§

There is another patch in lat. 17° 42′ 30″ S., long. about 38° 4′ E., about 4½ miles from the eastern edge of the Pantaloon shoal, upon which the least water found was 6 fathoms. Between this patch and the Pantaloon shoal the soundings are from 25 to 31 fathoms.§

ACORN SHOAL, in lat. 17° 37′ S., long. about 38° 10′ E., does not appear to have been closely examined, and should be approached with caution. H.M.S. *Acorn*, obtained 8, then 6 fathoms, then put the helm down and struck lightly in stays.‖ H.M.S. *Dart* got 5½ fathoms, and the sea was observed breaking at a short distance from her. At a mile distance all round the shoal, soundings of from 20 to 39 fathoms were found.¶

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* Vidal, 1823.

† Capt. Thos. Le H. Ward, 1875.

‡ *See* Admiralty chart:—Primeira islands to Mozambique, with plan of Antonio river, No. 651; scale, $m = 0 \cdot 1$ inch.

§ Commander Hyde Parker, R.N., 1849.

‖ Commander J. Adams, R.N., 1840.

¶ G. A. Stabb, Master, R.N., 1852.

H.M.S. *Orestes* in 1851 sounded on the edge of this shoal in 9 fathoms, the land not being in sight from the masthead; the discolouration of the water was very perceptible.

DAVID SHOALS consist of two rocky patches. The north-eastern one, in lat. about 17° 29′ S., and long. about 38° 32′ E., bears W.S.W. nearly distant about 18 miles from Silva island: the least water found on it was 5 fathoms. The other shoal on the same bearing, and distant about 3½ miles from the former, has 10 fathoms water on it.*

We have no recent notice of these shoals, and they should be approached with caution.

SILVA ISLAND, in lat. 17° 18′ S., long. 38° 48¼′ E., lies S.W. by W. ¼ W. about 4½ miles from Fogo island, and is the westernmost of the Primeira islands. It is barren sand, about 10 feet high, surrounded by reefs which extend from it about three-quarters of a mile, and is about 12 miles from the coast.* Ships may pass between Silva and Fogo in 14 and 15 fathoms, keeping nearest to the latter.

FOGO ISLAND, in lat. 17° 14′ S., long. 38° 51′ E., is surrounded by reefs which extend about a mile, except on the north side, which is bolder.* A vessel may anchor in 10 fathoms, at 3 or 4 cables from the beach, with the centre of the island bearing from S. by E. to S. by W.

When standing from the main land towards the anchorage, the soundings suddenly deepen from 10 to 20 fathoms, and then quickly into 10 again, at about 5 cables from the island. For communicating with the island it is preferable to anchor within the deep line of soundings, on account of the strength of the currents.† The anchorage also is better than it is beyond the deep soundings. There is no water to be obtained on the island.

Mr. Robert Jackson, master, R.N., in 1865 states,—Fogo island has a few trees on its north end, which when seen from the Casuarina group appear to be in the middle of the island; the other part is covered with short green shrub; the beach is sand, like the beach of all these islands. The island from the eastward has the appearance of two islands. A tide ripple extended from Fogo island towards the Crown bank island.

CROWN ISLAND, is about 4 miles N.E. by E. ¾ E. of Fogo, and 8 miles westward of the Casuarina island reefs. It is composed of sand, between 20 and 30 feet above the level of the sea at low water, with a few grasses on it, but no shrubs, and appears at a little distance perfectly devoid of vegetation. It is surrounded by reefs to the extent of half a mile.* The channels between Fogo and Crown island, and between the latter and Casuarina, are clear, with a depth of 14 or 15 fathoms water.

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* Vidal. † Commander T. Etheridge, R.N., 1851.

CASUARINA ISLAND, formerly called Tree island, in lat. 17° 6½′ S., long. 39° 3¼′ E., is 3¼ miles to the W.S.W. of Epidendron, and is very similar to it. It is covered from end to end with Casuarina trees, which are high, particularly on its north-east end. The reefs from this island extend S.W. 3 miles, S.E. about 2¼ miles,* and about the same distance N.E., leaving a clear passage about a mile wide between them and the reefs off Epidendron.† There is no water on this island. The timber, although heavy when first cut, makes strong spars, but the trees are not permitted to be cut for firewood.

Casuarina Road forms the best anchorage along this coast. If going in from the northward, keep Casuarina open to the northward of Epidendron, so as to lead to the north-west of Barraco reef, and also the reef to the eastward of it: the sounding are regular. A vessel may anchor in 8½ fathoms, with Casuarina S.S.E. ½ E. and Epidendron E.S.E.‡ but the best anchorage, to be out of the swell, is in 9 or 10 fathoms, about equidistant from the two islands.§

If proceeding between the islands and the main at night, take the soundings from the main land, but it is better to anchor.

Tides.—It is high water at Casuarina island, at 4 h. 15 m. The current runs generally to the S.W., at other times N.E. H.M.S. *Gorgon* in June found the current running N.E. 1½ knots during the flood, but it slacked during the ebb.

EPIDENDRON ISLAND, also called Raza, the easternmost of the Primeira group, lies about S. ¼ E. 6 miles from Macalonga point.* The northern part of the island has casuarina trees on it, but the southern part is covered with short shrubs only, though when seen from the southward the island appears as if covered with trees. Similar to Casuarina island it has an extensive reef on all sides except the north-west.† Epidendron island dips from a vessel's deck at a distance of 15 miles.

Barraco Reef lies about E. by N. distant 3 miles from Epidendron. There is also another small rocky patch, on which the sea breaks, 2 miles farther in the same direction.* These dangers do not appear to have been examined.

COAST.—From Macalonga point in lat. about 16° 59′ S., long. 39° 3¼′ E., to Caldeira point, a distance of 33 miles to the E.N.E., we have no information about the coast; but it appears by the chart to have regular soundings and to be clear of outlying dangers, except Moma island, and those off Macalonga point already mentioned.

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* Vidal.

† W. J. Olive, Master, R.N., 1847.

‡ T. J. Whillier, Master, R.N., 1851.

§ G. Charles, Master, R.N., 1846.

MOUNT COCKBURN, in lat. about 16° 29′ S., long. 38° 53′ E., and the only mountain seen on this part of the coast, is a remarkable cone of considerable elevation.

MOMA RIVER in lat. 16° 45′ S. H.M.S. *Thetis* anchored in August with mount Cockburn bearing N.W. ¾ N., and Caldeira point N.E. by E. ¾ E. in 9 fathoms, sand and mud, good holding ground. The ship rolled heavily, being kept broadside to the swell by the prevailing current which at this season always sets along the coast to the S.W. with more or less strength. The heavy rolling sea from the southward, at times had more the character of rollers on a bar than that which might be expected in an open roadstead.

The bar at the entrance of the Moma river is a long and heavy one; the best time for crossing is said to be the early morning, but depending on the tide. The boats of the *Thetis* crossed soon after daylight without difficulty. In coming out in the afternoon most of the boats were in tow of a Portuguese gunboat, but the galley and steam cutter which went out separately encountered two or three heavy rollers which nearly filled the former, the latter was protected by a canopy.*

CALDEIRA POINT (or Black rock point), in lat. 16° 39′ S., long. 39° 30′ E., is rather higher than the adjoining roast. It is fronted by a ledge of flat rocks, which are dry at low water, and a large black rock lies about half a mile to the north-east of the point.†

MOMA ISLAND lies S. ¾ W. distant 8 miles nearly from Caldeira point, and E. by N. ¾ N. 30 miles nearly from Epidendron island. It is a bare sand-bank, 15 to 20 feet high, surrounded by a reef which extends more than half a mile from the island.†

A bank with 5 fathoms on it, bearing S.W. by W. ¼ W., 9 miles from Moma island, was reported by Captain Wyvill, of H.M.S. *Cleopatra* in 1843.

Another small bank or shoal appears on the chart about 2½ miles S.W. by W. of Moma island; but we have no information about it.

The soundings between Moma and Caldeira islands are irregular, and with Caldeira and Hurd island in line bearing about N.E. by E., the water shoals in one place to 7 fathoms, and the bottom is plainly visible.

CALDEIRA ISLAND, in lat. 16° 38′ 45″ S., long. 39° 43′ E., is S.W. by W., rather more than 6 miles from Hurd island, and E. by S. 12 miles from Caldeira point. It is a small sandy island with a few casuarina trees on it, and surrounded by reefs extending off about a mile,† except on its north-western side. The trees on Caldeira island are irregular in their height, appearing in three distinct clumps.‡

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* Capt. Thos. Le H. Ward. † Vidal. ‡ J. W. Olive, Master, R.N., 1847.

HURD ISLAND lies N.E. by E. nearly distant more than 6 miles from Caldeira island, and S.W. by W. ½ W., 10 miles from Walker island. It is low, sandy, and covered with trees, much resembling Mafamede. On its east-north-east, south, and west-south-west sides the reef extends off about 1½ miles.*

MICHAEL REEF, in lat. 16° 31′ S., long. 39° 52′ E., lies S.W. ½ W. about 5 miles from Walker island. It is a dangerous reef of rocks uncovered at low water, extending 1½ miles N.E. and S.W., and about as much east and west. The edge of the reef should be given a berth of at least half a mile. H.M.S. *Leven* was in 3½ fathoms when a quarter of a mile off its west end.*

WALKER ISLAND or cay, lies S.W. by W. ¼ W. 8 miles from Mafamede, and S.E. by S., 2 miles from Angoxa point.* At high water Walker island shows only as a small sand cay 6 or 8 feet above the sea.† It is surrounded with reefs which extend on its east, south, and south-west sides, in some places, 1¾ miles. H.M.S. *Rapid* passed between Walker island and the main, without getting less than 7 fathoms water.‡

MAFAMEDE ISLAND, in lat. 16° 20½′ S., long. 40° 1′ E., lies S.W. ½ W., about 13 miles from Antonio bank,* and 7 miles from the mouth of the Angoxa river. It is a low sandy island, about a third of a mile long, N.E. and S.W., mostly covered with tall slender casuarina trees, and may be seen 12 or 15 miles distant, It is surrounded by coral reefs, extending N.E. about 1½ miles, S.E. 1¾ miles, and S.W. 2 miles. On the west-north-west side of the island the shore is pretty steep and the landing good.

H.M.S. *Brisk* anchored in 10 fathoms, with the centre of the island, S.E. by S. distant 9 cables, the extremes of reef (dry at low water) bearing E. by S. and South nearly. This is a good safe anchorage, but not over smooth; a berth nearer the island may be chosen if desired. There is no water on Mafamede; it is not desirable that the trees should be cut down for firewood on this and similar islands, because they are so useful in showing their position.

A sandy shoal, half a cable in extent, bears N. ¾ W. 1½ miles from the centre of Mafamede. It has 4 and 5 fathoms on it, except in one place near its eastern end, where there is only 3½ fathoms at low water springs. This patch was observed from the masthead of the *Brisk* when sailing towards Mafamede, and subsequently carefully examined with the boats. Captain Stanley, of H.M.S. *President*, in 1847, observed it also, and he reports another patch with 5 fathoms water on it, about a quarter of a mile East of the one described, and that there is a channel of 7 and

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* Vidal. † J. W. Olive, Master, R.N., 1847. ‡ W. F. Rowe, Master, R.N., 1862.

8 fathoms between these patches, and the same depth between the eastern patch and the reef.

ANGOXA POINT (pronounced Angosha) is very low, and appears like a number of small sand hillocks. It is bordered by a dry sand bank in the form of a crescent at the distance of about half a mile. Here the whole coast is a dead flat. To the southward of Angoxa point are several small inlets which probably communicate with Angoxa river. At 3 miles to the northward of Angoxa point, there was in 1823 a remarkable tree, resembling at a distance a ship on a wind under a press of sail. It is the most conspicuous object on this part of the coast, and may be seen 12 miles.

ANGOXA RIVER.—To find the mouth of this river, observe a remarkable clump of casuarina trees which stand on Monkey island, and bear N.W. ½ N. about 8 miles from Mafamede island. The *Brisk* anchored in 7 fathoms at low water, with the clump on Monkey island N.W. by W.; centre of Mafamede S. by E.; Sandy bluff N.E. ¾ N.; and Angoxa point S.W. by W., 2 or 3 miles from shore, but close enough for a safe berth; there was a fathom less water, a cable outside the vessel.

The land to the northward of the river is a low sandy cliff, topped with trees. To the southward of the river the land is lower, but has four large remarkable trees on the south point, between which and another clump 3 miles farther south, is a village.*

The Angoxa is wide and deep for 20 miles, and is reported by the natives to be navigable for small vessels for 130 or 150 miles.† This is not improbable from the large body of water which comes out of the river.

Bar.—The last reach of the river flows in an easterly direction in a straight line for 10 or 12 miles, nearly a mile in width, the main body of water passing between Monkey island and the north shore, after which it is deflected southward to the bar by the north-eastern shoals, the bar being about 2 miles from the north shore, and as far from Monkey island.

At one-third ebb 9 feet, and at half ebb 8 feet water, has been found on the bar. There is probably 14 feet at high water springs, and 4 feet at low water.

To approach the bar, bring Mafamede island to bear S. ½ E., and keep it so, taking care in steering to the northward to allow for the usual set to the westward. The above bearing of Mafamede will lead nearly abreast of the bar, but the eye is the only guide for taking the deepest water, as the bar is liable to shift, and there are no marks on shore. With a moderate swell only, the entrance will show by the breakers on each side, otherwise the bar should not be attempted. At last quarter flood it is generally smooth all over. This bar may be crossed in almost any weather, and is far safer than the Quilimane or Kongoni.

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* W. J. Olive, Master, R.N., 1847.

† Commander R.B. Oldfield, R.N., 1859.

When outside the bar keep a good look out for appearance of breakers, for there are some patches of shoal ground, which break nearly a mile outside the regular bar. These may be seen at a distance and avoided.

There is a boat channel westward of Monkey island, which may be used with advantage when leaving the river in moderate weather, as the channel is winding and protected by the breakers on each side, but it would be difficult to find when entering the river.

Monkey Island and two or three other small islands are within the bar and to the southward of the entrance. An extensive sand spit runs off from the east-north-east end of Monkey island, which should be left on the port hand when entering the river.

The inner end of Monkey island is well adapted for a stopping place for boats, being sheltered and smooth water, with a depth of 3 fathoms alongside a steep sandy beach. The boats crews of H.M. ships *Brisk* and *Lyra* encamped here, and found good water in the midst of a remarkable clump of casuarina trees on the west end, by digging a couple of feet. There are casuarina trees also on the east side of the island, but here no water was found.

Angoxa Town.—To find the creek which leads up to the town, observe in ascending the river an island in mid-channel, which from the mouth of the river appears to be the farthest low land: keep sight of this island, and when up to it, leave it on the starboard hand, and the first creek on the port hand after getting abreast of the island will lead up to the town: this creek is only navigable for boats at half flood, at low water even a canoe cannot ascend. There is deep water for dhows alongside the bank close to the fort.

The town, built partly of wood and partly of stone,* stands on a sandy plain some 20 miles up the river, is protected by a small fort, is the residence of a Portuguese governor, is garrisoned by 80 Portuguese soldiers, and contains about 1,000 inhabitants. The Sultan of Angoxa lives in the country, about 6 miles from the town; the road to his abode being either a swamp, or composed of dry caked mud, according to the season. The number of inhabitants varies much according to the time of year, as they are principally engaged in trading to Zanzibar and other places. They are generally armed with spears and a few muskets, and are not to be trusted.

The principal export consists of ivory, ebony, orchilla weed, gum-copal, cocoa-nut oil, coir, and ground nuts may be obtained from the interior;* and formerly cargoes of slaves.

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* Mr. Lyons McLeod, 1857.

Winds.—The usual sea breeze varies according to the monsoon from E.N.E. to S.W. In November it was found to blow fresh at E.N.E., falling light at night, and hauling to the N.N.E. in the early morning. At this time of year strong south-westerly winds with a heavy swell, and rainy weather occasionally occur, this being the commencement of the rainy season.

The Current generally sets according to the monsoon, but most frequently to the south-west. H.M.S. *Thetis* in March 1875, anchored between Mogincale point and the entrance to Umfoussi river, in 12 fathoms water, coarse sand, and about 5 miles from the shore. The current here at times ran past the ship at the rate of 3 or 4 miles an hour. In proceeding from off Angoxa river to Mozambique well outside the dangers, the current was found so strong to the south-west as to compel the vessel to stand out to sea to avoid it. The estimated strength of the current was 90 miles in 24 hours.

Tides.—It is high water, full and change, at the mouth of the Angoxa at 4h. 0m.; springs rise 10 or 12 feet.

COAST.—From the Angoxa northward the coast is composed of sand hills, which increase in height until reaching the south side of Antonio river, where they are said to be 300 or 400 feet high, and have several patches of bright red sand. The land in the vicinity of Antonio river is remarkable, the northern side of the river being a low sandy point, whilst the high sand hills on the south side form a striking contrast to two rocky points 4 or 5 miles to the southward of the river. From the southward, after passing Walker island, the sandy bluff of Antonio river will be seen showing like an island. The sand hills southward of the river have vegetation on them.

ANTONIO RIVER.—The entrance to this river, in lat. 15° 57′ S., long. 40° 7′ E.,* is only fit for boats.†

The soundings off this coast are from 8 to 12 fathoms at 6 or more miles from shore. With the mouth of Antonio river bearing from West to W. by N., distant 7 or 8 miles, the *Brisk* passed over some shoal ground, with depths of 5 and 6 fathoms for a mile or more, the bottom being distinctly visible, but there did not appear to be any shallower spots. H.M.S. *Rapid* appears to have passed over the same shallow ground, with the mouth of Antonio river about W. by N., finding regular soundings of 5 and 6 fathoms for 2 or 3 miles, when proceeding on a S. by W. course.‡

In approaching this part of the coast at night sound quickly, taking care not to go into less than 20 fathoms. In the *Brisk* no bottom was found with 45 fathoms, and a quarter of an hour afterwards 7 fathoms was obtained, when the vessel immediately anchored.

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* Owen.

† *See* plan of Antonio river on chart No. 651.

‡ W. F. Rowe, Master, R.N., 1862.

Antonio Bank.—The southern extremity of this danger is said to be in lat. 16° 9′ S., long. 40° 7½′ E., with the north side of entrance of Angoxa river bearing W. ¼ N. nearly, distant 9 miles, and Mafamede S.W. ½ W. 12 miles. It is a coral bank, about 2¼ miles long, N.E. and S.W., by 1¼ miles wide, with a few scattered dry sandy patches on its south-west end. It is steep-to, particularly on its south-west side.* Outside Antonio bank at the distance of 2 or 3 miles it appears awash, and does not show when more than 4 or 5 miles off.

It will be seen that the geographical position with the bearings and distances given of the Antonio bank do not quite agree, and as the shoal is very dangerous, it is necessary to be cautious when in its vicinity.

HUDDART SHOAL, the centre of which, in lat. 15° 46′ 40″ S., long. 40° 25′ E., is S.W. ½ S. about 18 miles from Barracouta point, and about 7 miles off shore.* Captain Vidal passed over this shoal in 3¼ fathoms, but thinks there is less water in places, as the sea sometimes breaks. This shoal should not be approached without much caution, and a vessel should not stand into less than 20 fathoms water at night, when in its vicinity.

MOGINCALE POINT is a high sandy bluff, well wooded; a small reef of rocks extends round it, at a distance of about one-eighth of a mile.* With Mogincale point bearing about N.W. the distant land behind is rather high, and that close to the beach low and sandy, with casuarina trees upon it. The sandy beach is broken in several places with openings like the mouths of small rivers. With the point N.E. by N. the land behind Mogincale river and to the north of it is shut in with the point, and the coast north appears low and topped with trees. The river Mogincale is to the northward of the point, and 2 fathoms can be carried over the bar at high water, but there are often heavy rollers on the bar without any apparent cause.

MOGINCALE SHOALS, between the parallels of 15° 33½′ and 15° 36′ S., and the meridians of 40° 31½′ and 40° 29½′ E., lie off the Mogincale river, about 4½ miles from the line of coast. They consist of several rocky patches, on which the sea generally breaks. Their outer edge is S.S.W. 3 miles from Barracouta point.*

The few soundings which appear by the chart, No. 651, to have been taken off this part of the coast are very irregular. For example, 2 miles or less outside the Mogincale shoals there appears to be no bottom with 65 fathoms, whilst 3 or 4 miles farther seaward, soundings of 13 to 23 fathoms are noted. Much care, therefore, is required in approaching this coast at night, and it is very desirable that a few lines of soundings should be run in the vicinity of these dangers, should opportunities offer.

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* Vidal.

BARRACOUTA POINT is extremely low, has a remarkable tree on it resembling a ship on a wind, and forms the northern point of a small river, which appears barred and shallow.* The point is S.W. ¼ S. distant 31 miles from St. George island.

A reef in the form of a horse-shoe extends from the point nearly 2 miles. On some parts of it there are but 7 or 8 feet water, whilst within the horse-shoe, which opens to the north-west, there are 5 fathoms.*

In January 1875, the *Thetis* anchored off this point, in 15 fathoms, hard sandy bottom, the Bajone shoal about 4 miles north, and another not marked on the chart about one mile west, the bottom generally in the locality being foul. At this distance from the shore, the *Thetis* swung regularly with the tide, the ebb running north and the flood south.†

UMFOUSSI or KIVOLANI LAGOON.—N'tewende, in lat. 15° 29′ S.; Umfoussi, in lat. 15° 28′ S.; Barrigi, in lat. 15° 22′ S.; and Muchi, in lat. 15° 17′ S., are all entrances to one large system of lagoons extending some miles inland; they are intersected by narrow creeks lined with mangrove bushes, and divided by large tracts of low land, on parts of which are villages surrounded by cultivated land. The greater part of the land, however, is swampy, but left dry at low water.

One or two small rivers flow into the lagoons, and it is conjectured from the name Kivolani being applied to the whole lagoon system that it is the delta of a large river of that name.

The Umfoussi is, properly speaking, only the name of the chief entrance from the sea, and, from its being the most important one, sometimes gives its name to the lagoon system. There is another river named Kivolani which flows into port Mokambo in lat. 15° 10′ S.†

Within the delta of Umfoussi, the rivers are navigable for dhows at high tide for six months, though crossing the bars is attended with some anxiety.

BAJONE SHOAL, in lat. 15° 27′ S., long. 40° 39′ E., lies about S.S.W. ½ W. distant 24 miles from St. George island, and 3½ miles from shore. It is a patch of rocks having on them 5½ fathoms, with 14 fathoms close to.* We have no information of any shallower spots on this shoal, but it should be avoided.

H.M.S. *Thetis*, in January 1875, touched on a shoal, of which Capt. T. Le H. Ward, writes:—I have since ascertained beyond any reasonable doubt that the shoal we touched upon was the *Nakir*, which, according to the account given by an Arab captain in the Portuguese service, lies a few miles north and considerably nearer the shore than the Bajone, and moreover nearly always breaks, whereas the Bajone only does so in heavy weather.

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* Vidal. † Capt. T. Le H. Ward, H.M.S. *Thetis*, 1875.

The COAST from Mogincale point to Mozambique is low, with a hill of very moderate height and gentle rise in the back ground. To pass along this coast clear of the outlying patches, do not come into less than 20 fathoms water. The soundings on the outer edge of the patches are all coral bottom, but within them generally sandy.*

About 12 miles south of Mozambique the land is well wooded and the coast sandy, with a depth of 20 or 22 fathoms, 4 or 5 miles from shore. When approaching this coast sound frequently, for from 40 fathoms the next cast will be 25 or 20 fathoms, and a vessel should not approach nearer than this latter depth.†

Bajone Point or Rás Mtende is low, sandy, and covered with trees to the beach. It should be given a good berth in sailing along the coast. The coast from Bajone point to Mudge point has not been examined, but the shore all the way is foul and apparently shallow.‡

MOKAMBO BAY is formed between Bajone and Sancoul points. These points are nearly in the same meridian and 9 miles apart.‡ This bay is deep and unfit for anchoring. The north shore should have a berth of about 2 miles to clear Peel bank, which extends southward a considerable distance from some remarkable looking rocks on the beach. This low shore should not be approached at night, as the water is deep close to the reefs. The south shore, also, as before mentioned, is apparently foul.§

MUDGE REEF extends upwards of 1½ miles E. by N. ½ N. from Mudge point (Rás Kisarahondo); the latter being nearly an island connected to the main by a neck of land, which is just awash at high water. William point, open of Mudge point, clears the reef. Mudge reef lies much in the fairway of the entrance to port Mokambo, but having passed to the north-east of it, the north-west face of Mudge point is steep to. The end of the reef is N. by W. ¾ W. about 7 miles from Bajone point, and 5½ miles from the east extreme of Sancoul point. The channel into port Mokambo is to the northward of Mudge reef, and 2 miles wide, with no other known danger.‡

PORT MOKAMBO, called also Kivolani bay, is a spacious basin 4 miles in diameter, in the central part free from shoals, and with depths in most places of from 10 to 15 fathoms. The whole eastern side of the port in a line S.W. ½ S. from William point is bordered by a flat with 1½ fathoms water on its edge, and which extends a long mile from the head of the bay which the shore forms. On the western side of the port are rocky shoals with 1½ and 2 fathoms water on them, extending 1½ miles in a N.E. and S.W. direction. Between these reefs, which lie on either side of the port, there is anchoring space of about 2 miles.

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* Vidal. † French MS. ‡ Owen.

§ *See* Admiralty plans—Conducia, Mozambique, and Mokambo ports, No. 653; scale, $m = 0\cdot 8$ inch.

The entrance to the port is between Mokambo point or Rási Fugu on the north-west, and Mudge and William points on the south-east. Mokambo point is W.N.W. 1½ miles from Mudge point; the channel between is perfectly clear. William point, 1½ miles to the W.S.W. of Mudge point, and on the same shore, is conspicuous with a projecting reef which dries at low water, and a detached reef off it. The channel between William point and Mokambo point, nearly north of it, is also 1½ miles wide; these three points, thus forming an isosceles triangle, are low but well marked.*

The only danger in the entrance of port Mokambo appears to be the detached reef off William point, which bears from it about N.W. by N. two-thirds of a mile. At low water spring tides there is only 3 feet water on this patch.†

DIRECTIONS.—To enter port Mokambo, proceed for a position about midway between Bajone and Sancoul points, and bring Mokambo peak, which is 135 feet high, to bear W. by N. ½ N., and then steer for it. This line will lead a long half mile southward of Peel bank and nearly the same distance northward of Mudge reef. When William point is midway between Mudge and Mokambo points, then keep mid-channel.

If Mokambo peak cannot be defined from its being nearly of the same elevation as other land in its vicinity, cross bearings should be taken and the vessel's position checked in her course towards the port.

If proceeding to the north side of the port, Mokambo point may be passed close to, in deep water. There are extensive sand flats to the W.N.W. of Mokambo point, which are partly dry at low water. A vessel may steer along the edge of these flats by the lead to the north shore, or keep some trees on Mudge point open of Mokambo point, hauling in and anchoring in 8½ fathoms, with a red house in the village N. ¼ E., and Mokambo point S.E. In this position, a vessel will be 3¾ cables from the nearest part of the beach where the village stands, and about 2 cables to the north-eastward of a rocky shoal, which extends three-quarters of a mile to the eastward from the shore, south-west of the village, and which at low water has only one foot on the shoalest part. From the eastern extremity of this shoal the red house in the village bears N.N.E., and the centre of Mokambo peak N.E. by E. ½ E.‡

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* Owen. † W. J. Wheeler, Master, R.N., 1840. ‡ Commander E. Peel, R.N., 1845.

At this village supplies of poultry and vegetables are plentiful, and if water is required, the native chief of the village will have your casks filled on the beach for three-quarters of a dollar a ton. This is the best way to water, as the entrance of the river is very shallow, only admitting small boats, which makes watering tedious, and exposes the crew.*

If proceeding to the south side of the port: from mid-channel between Mokambo and Mudge points, continue to the W.S.W., and give William point a berth of nearly a mile, or bring Mokambo point to bear eastward of N.E. until William point bears S.E.; a vessel may anchor in 14 fathoms, with the west end of the hill on the north side (Mokambo peak ?) bearing N. by E. ¼ E., and William point N.E. by E. ⅓ E. At a village S.S.W. from this anchorage there is a small well under a tree with luxuriant foliage. By digging the well deeper, and the use of the fire engine, 6 tons of water per day were obtained. Wood may be procured here, also fowls, fish, and cocoa-nuts.†

Mokambo is governed by an indepeudent chief, but there is a colony of Arabs who monopolize the trade.

Mokambo Peak, which is on the north shore of the port, about 1¾ miles to the north-west of Mokamdo point, is 135 feet above the sea, and the highest of these hills of nearly equal altitude.

Tumonia River, in the south-west corner of port Mokambo, is about 5 or 6 miles from the entrance, and has good depths for small craft;‡ its mouth is fronted by shoals, but there are 4½ fathoms between them and the river.

It has been *reported* that there are hot springs about 3 miles from the mouth of the river.

Tides.—It is high water, full and change, in port Mokambo about the same time as in Mozambique harbour, viz.: at 4h. 15m.; and the rise and fall at springs 12 feet.

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* Commander E. Peel, R.N., 1845.

† W. J. Wheeler, Master, R.N., 1840.

‡ Owen.

CHAPTER VII.

MOZAMBIQUE HARBOUR TO CAPE DELGADO.

VARIATION IN 1878 :—

Mozambique	14° 0′ W.	Ibo island	12° 50′ W.
Cape Loguno	13° 40′ W.	Cape Delgado	11° 55′ W.
Pomba bay	13° 0′ W.		

Signification of native terms used hence to Cape Guardafui :—

Fungu	Bank or sandy reef.
Khari	Creek.
Khor	Salt water inlet, usually tidal.
Kilima	Hill.
Kisiwa	Island.
Makuti	Houses thatched with cocoa-nut leaves.
Mlima	Mountain.
Mto	River, inlet, or creek.
Mwamba	Reef.
Rás or Rási	Cape or point.
Visiwa	Islands.

MOZAMBIQUE.—The harbour of Mozambique is formed by a deep inlet of the sea 5½ miles broad by 6 long, receiving the waters of three inconsiderable rivers at its head. At the entrance are two small islands, and farther in the island of Mozambique, which, together with reefs and shoals, render the anchorage perfectly safe.* The land is all low in the vicinity of Mozambique harbour. On nearing it, fort St. Sebastian with its high flagstaff and Portuguese flag on the eastern extreme of Mozambique island, and the objects on St. George island, will be seen.†

PAÕ and TABLE MOUNTAINS. — Paõ mountain and Table mountain are very remarkable in clear weather. Paõ (Matipa) may be likened to a small round-topped hill on top of a larger one ; it bears N.W. ⅛ W.

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* Owen.

† *See* Admiralty plan of Mozambique Harbour, No. 652, scale m=2·0 inches ; and sheet No. 653. Also charts:—Mozambique to Pomba bay, No. 1,809, scale 0·2 inch ; and Comoro islands with the adjacent coasts of Africa and Madagascar, No. 2762.

(N. 60° 3′ W. true) from fort St. Sebastian, distant 23¼ miles, and when on that bearing leads direct to St. George island; it is, however, not often visible. Table mountain, 1,095 feet above the sea, to the northward of Mozambique, in lat. 14° 42′ 45″ S., long. 40° 36′ 20″ E.,* appears to consist of a long flat-topped hill on top of a longer ridge of land, also flat-topped. When seen at a distance only the upper part of the mountain is visible, and it then makes like a flat island.

When approaching Mozambique endeavour to get the latitude frequently if a bearing of these mountains cannot be taken, as the currents are strong; but if Table mountain is visible, its bearing will always determine whether a vessel is to the northward or southward of the port. The land is high and rugged to the northward of Table mountain, but all low to the southward.† Table mountain N. by W. leads direct to St. George island.

Current.—The current generally sets to the southward from 2 to 4 knots, but it varies much according to a vessel's position. Abreast of Mozambique it has been found running S.E. by E. (true) 4 knots, whilst 60 miles to the southward it ran one knot to the N.N.W.

SANCOUL POINT, the south-west point of Mozambique inlet, has a few huts on it. All the land between Mokambo, Sancoul, and Calombo is low. The Sancoul sands, which cover at three-quarters flood, extend from Sancoul point to Quisũmbo point, and more than a mile from shore.

The Mozambique Flat is a great coral bank which fills the whole space between Sancoul and Quisũmbo points on the coast, and the islands of St. Jago and Mozambique. This flat has in most places 9 feet at low-water spring tides, and small vessels may at most times pass over it, but the sea generally breaks heavily on the south edge between Sancoul point and St. Jago island.‡

St. Jago Island, also called De Sena, is about the same size and description as St. George island, but it is wooded, and therefore visible at a greater distance. It is about 1½ miles to the S.W. of St. George, leaving a clear passage about a mile wide.‡

St. Jago is about 3¼ miles S. by E. ¼ E. of fort St. Sebastian, and on the south-east extremity of the great coral flat of Mozambique, whilst Mozambique forms the north limit.

St. George Island, (centre in lat. 15° 2′ 12″ S., long. 40° 45′ 30″ E.), also called Goa, is a flat coral island about half a mile in diameter, $2\frac{6}{10}$ miles to the S.E. of fort St. Sebastian; it is very low without trees, and does not show from the deck until within 5 miles; there is a square lighthouse near the north-east part, and a little north of it a flagstaff. The island is bounded by rocks, except in one spot on its north-west side. A reef extends a quarter of a mile from the north-east point, which should have a berth of half a mile during the flood tide, as it sets strongly towards it. The soundings at 2 cables from St. George on its north-east side are 3½ fathoms; between this depth and the extensive shoals extending southward from Tree island group, and around Cabecinha point, the soundings are from 5 to 8 fathoms.

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* Lieut. F. J. Gray, H.M.S. *Nassau*, 1875.

† Captain W. L. Castle, R.N., 1837.

‡ Owen.

Coral Knolls.—There are three coral knolls in the outer bay of Mozambique, the two southern of which have never less than 3 fathoms, and are in the fairway of the south channel. The northern one has only 2¾ fathoms in one spot. Mr. Luke, master of H.M.S. *Boscawen*, endeavoured to find this patch, but without success, and is of opinion that it does not exist.

Tree Island (hereafter more fully described), to the northward of the entrance of the harbour, may be known by its having straggling trees on its north-east extreme, none elsewhere. The two smaller islands south of it have no trees.

Harpshell Spit is the south-west extreme of the extensive shoal ground which surrounds Cabecinha point, the shallow water extending nearly 1¼ miles from the point. At low water it shows plainly, and can be traced at times by the eye even at high water, but at other times it is dangerous.

St. Sebastian Spit projects a quarter of a mile to the eastward of the fort. At low water this spit is clearly visible and often dry, but at high water it is dangerous.

LIGHTS.—The lighthouse on St. George island exhibits at 66 feet above high water, a fixed white light, visible in clear weather from a distance of 15 miles.

Attached to the flagstaff of fort St. Sebastian is an iron scaffolding, from which, at an elevation of 74 feet above high water, is exhibited a *fixed red* light, visible from seaward between the bearings of S.W. ¼ S. and N.E. ¼ N., at a distance of 12 miles.

At Cabeceira Grande is an iron scaffolding on a stone basement near a white house, from which, at an elevation of 36 feet above high water, is shown a *fixed* white light, visible over the south channel and up the harbour from a distance of 12 miles.

Two *green* lights, 19 feet above high water, are also shown from the custom house pier.

Buoys.—Red buoys mark the north-east spit of St. George island, the north-east spit of St. Jago, and the north extremity of St. Sebastian spit. Black buoys mark the south-west spit of St. George island, and the projecting spits of Harpshell or Cabeceira sands. These buoys are moored in

3 fathoms water, and on entering Mozambique the black buoys should be left on the starboard hand, and the red buoys on the port hand.

Too much reliance must not be placed upon the exact position of these buoys.

Pilots.—When proceeding into Mozambique a pilot may probably board a vessel some distance inside St. George island, but by attention to the directions the pilot's services may well be dispensed with.

DIRECTIONS.—If approaching from the northward the south-east points of St. George and St. Jago in line will clear the reefs off cape Cabeceira and Tree island.* To enter by the north channel, bring St. Sebastian light (*red*) to bear N.W. by W. ½ W., and steer for it on that bearing, passing about a quarter of a mile to the northward of the *red* buoy on St. George spit, and leaving the black buoys on the starboard hand. By day the Portuguese flag will be seen close to the lighthouse and is conspicuous. When Cabeceira Grande light bears N. by W. ½ W. steer for it until the *green* lights on custom house pier come in sight, the course should then be gradually altered to the westward; when St. Sebastian light is lost sight of steer for the custom house pier lights, and anchor as convenient.

Vessels of large draught should use the north channel only.

In sailing in or out, if becalmed outside, a vessel may anchor in 10 or 12 fathoms, as the soundings extend about 1½ miles outside St. George and St. Jago islands, but the bottom is rocks and coral. There is said to be between St. George and St. Jago islands a deep hole with 24 fathoms water, but the exact position is unknown.† In going through the narrows be quick with the helm, and make due allowance for the tide, which runs strong.

South Channel.—It is not advisable for heavy ships to enter by the South channel without sending boats to mark the position of the 3-fathom coral knolls. When approaching from the southward, keep Tree island open of the east point of St. George.* In entering the channel, bring St. Sebastian light (*red*) to bear N.W. ¾ N., and steer with the light a little on the starboard bow until Cabeceira light bears N. by W. ½ W.; then steer for this latter light and proceed as before.

Commander E. Peel, of H.M.S. *Bittern*, recommends keeping nearer to St. George than to St. Jago island, and to bring Paõ mountain on with the centre of fort St. Sebastian, which he found to lead clear of the coral knolls.

Outer Harbour.—The usual outer anchorage is to the south-eastward of fort St. Sebastian in 7 or 8 fathoms, with the flagstaff on fort St. Sebastian bearing N.W., distance from half to one mile, and Tree island just open of cape Cabeceira. Here a vessel will be out of the strength of the tide. The tidal stream runs with great force through the narrows and North channel, and much care is required in bringing a ship up.

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* Robert Beecroft, Master R.M., 1825. † Commander J. Adams, R. N., 1840.

There are places which are inconveniently deep for anchoring; the *Brisk* anchored in 7¾ fathoms, with the north-east angle of fort St. Sebastian N. 50° W., and the north-east end of St. Jago S. 11° E., and found 20 fathoms water about a ship's length to the north-east of this position. The *Narcissus* anchored in 22 fathoms, with the northern angle of fort St. Sebastian N. 56° W., and Tree island half shut in with cape Cabeceira N. 54° E. The *Mutine* found no bottom at 17 fathoms, with the centre of fort Lorenzo S. 81° W., and the south end of St. George island S. 45° E., and 2 cables to the southward of that position, 12 fathoms.

Inner Harbour.—In taking up a berth in the inner anchorage, keep near the shore of Mozambique, to avoid Leven bank, which has only 2 fathoms on it at low water, and the nearest part of which is about 4 cables from the north shore of Mozambique.

There is also a 3¾ fathoms bank 3 cables N.N.W. of fort St. Sebastian, which narrows the channel to 2 cables between the bank and fort for large ships.

The *Brisk* anchored in 5½ fathoms, about 2 cables from shore, with the end of the pier S.W. ½ W.; flagstaff on St. Sebastian fort S.E. ½ E., and the north angle of the fort E.S.E.

Wrecks.—A wreck, with 4 feet on it at low water, lies (1874) in a north and south direction near the south edge of the 3¾-fathoms bank, which lies N.N.W. from the flagstaff at fort St. Sebastian. The wreck is marked on its east side by a square black buoy, moored in 4¼ fathoms, with the following bearings, namely, fort St. Sebastian flagstaff S.S.E., the pier end at Mozambique S.W. 3¼ cables. The buoy does not watch well after half flood, and its maintenance is not to be depended upon.

Vessels entering the inner harbour should leave the buoy on the starboard hand, and not pass it too closely.

Also a black and white can buoy has been placed on a wreck which lies in the fairway to the inner anchorage of Mozambique. From the buoy the fort flagstaff bears S.E. ¾ E. 3¾ cables, and the end of the pier S.W. ½ S. 1¾ cables.

CAUTION.—The anchoring ground inside appears to be silting up, the soundings having decreased 2 or 3 feet since Owen's survey of 1823. Caution is therefore necessary, as considerable alterations in the channels have likewise been caused by the rapid tides which run in Mozambique harbour.

Mozambique Island, on which stands the city, is formed of coral, very low and narrow, and about 1½ miles long. It lies nearly half way between, and just within the line connecting the headlands of

Cabeceira and Sancoul; but the only ship channel to the inner harbour is to the eastward of the island, where, in the narrows, it is less than 3 cables wide.

Mozambique island is covered with buildings, which are of stone. The Governor General's palace is an extensive stone building, and in front of it there is a convenient wharf, affording landing for boats at all times of tide.

The population of Mozambique may be about 8,000, including the garrison about 200, Arabs, Banians, negroes, and slaves. There are but few Portuguese except those holding official positions, and no British merchants.

The mail packet from Table bay, port Natal, Delagoa bay, Inhambane and Quilimane calls here monthly, and thence to Zanzibar and Aden, and *vice versâ*.

St. Sebastian fort is the most prominent feature on the island. It was built in 1508–11 by the Portuguese, and is of a quadrangular form, nearly 70 feet high, mounting about 80 guns, mostly in embrasures, but a few en barbette, also a 10-inch mortar. None of the guns exceed 18-pounders in size, except an ancient piece of brass ordnance, 16 feet long, capable of throwing a 10-inch shot of stone.

Lorenzo fort is built on a small isolated rock off the south-west extremity of the island, to which at low water it is joined by a coral flat. This fort mounts 9 or 10 guns.*

Water is to be obtained by permission for men-of-war from the tanks within the fort. It is rain water, but keeps well. The casks must be rolled up to the tanks and filled with draw buckets. There are other watering places for the use of the town and merchant vessels, but it is doubtful whether Mozambique could water a large fleet. Water is brought alongside for two dollars a ton; it is rather thick at first, but good.

Supplies.—Fowls, oranges, and other fruits are plentiful, and fresh beef may be obtained by giving a day's notice. American salt beef and pork, spirits, and Brazil sugar may be purchssed, but at a high price.

Coal for steam vessels is generally to be obtained in small quantities.

Trade.—The articles exported are:—ivory, colombo root, gold (from Sofala) in small quantities, ambergris, amber, grain, and cowries.† The imports are principally cattle and rice. There is, however, but little trade, which is owing chiefly to the restrictions and heavy duties laid by the Portuguese custom house, and also to the extreme unhealthiness of the port.

Repairs.—Coasting vessels of small burthen are built here, and ships may be repaired, chiefly by negro workmen, with the timber of the country, and there is a Government factory for repair of machinery. Spars are scarce and dear.

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* Captain J. Polkinghorne, R.N., 1882. † Owen, 1823.

Winds.—The prevailing winds on the coast about Mozambique are northerly from October to April, and from the southward during the rest of the year. At Mozambique land and sea breezes prevail; the latter coming in about 10h. or 11h. a.m. at S.E. At daylight the land wind at W.N.W. blows right out of the harbour.

Capt. T. Le H. Ward, of H.M.S. *Thetis*, in May 1875 writes:—Fine weather with strong South and S.W. winds, the former in the evening and at night, and the latter during the daytime. The tides are strong, and during the flood the wind blowing directly against it causes the ship to swing broadside on, which kept her pleasantly cool. The days are hot, but the nights, especially towards morning, quite cool. Fever is said to be prevalent now in consequence of the cold weather, and the Mozambique residents (European) always wear woollen clothes at the present time.

Hurricanes are experienced occasionally, but at rare intervals. About the latter end of January of the years 1841, 1842, 1843, Mozambique was visited by a violent hurricane from the north-westward. At one of these periods the vessels drove from their anchors and were stranded. One, an English barque, in attempting to run out to sea, struck on St. Sebastian Spit owing to the extreme darkness, although mid-day; she went to pieces in a short time, and most of the crew perished. From the description of those who witnessed those hurricanes, the bottom of the sea was agitated to such a degree as to heave and loosen the sand, rendering it impossible for the anchors to hold. Black impenetrable clouds overhead produced a darkness as during an eclipse. Previous to these visitations, hurricanes had been unknown for 40 years.

The last hurricane at Mozambique, of which we have any notice, occurred on April 1st and 2nd, 1858, on which occasion the barometer fell to 28·7, and seven out of ten vessels at that time in the port were driven on shore; much damage was done on the island of Mozambique and surrounding country.

Tides.—It is high water, full and change, at Mozambique at 4h. 15m.; springs rise 12 feet.

Currents.—As the current generally runs to the southward off Mozambique, varying from 2 to 4 knots, which extends from close outside the outer reefs of Mozambique to 50 or 80 miles from land, vessels bound to Mozambique should, therefore, make the land well to the northward, especially during the northerly monsoon; and in the event of a sailing vessel being swept to the southward of the port, she should at once stand to the eastward for 60 miles or more, and regain her northing beyond the influence of the southerly current. As the distance from the land is increased beyond the above distance, the current will probably become weaker and variable.

In sailing southward from Mozambique, observe that the flood tide runs 1½ or 2 knots into Mokambo bay;* but farther out, when beyond the influence of the tide, the current generally sets rather off the land. It has been known to set off as much as S.E. by E. (true) on two occasions.

Mossoril Bay is a fine harbour to the north-west of Mozambique island, about 2¼ miles long, by 1¼ wide, with depths of from 4 to 7 fathoms, and capable of containing a fleet, but it has been only partially sounded.

The north-west part of Mossoril bay branches off into three creeks. The northern one, Mossoril creek, extends to the isthmus of Empassa, which only separates it from port Conducia by half a mile. There is a road of communication for the convenience of traders lying in Conducia.†

The western creek branches into two, Calombo on the west, and Lomboo on the south. The shores of all these creeks are lined with mangrove.†

CAPE CABECEIRA is the south-eastern extremity of the Cabeceira peninsula; it is a low bluff cliff with trees on it. An extensive submerged coral flat surrounds the cape and the coast northward and westward; this flat extends in some places nearly 2 miles from shore, and scarcely anywhere less than a mile as far as Conducia bar; this coral flat embraces the Tree islands. The coast gradually rises to cape Conducia, with a sandy beach the whole way.

Tree Island or isle de Pau, is the northernmost and largest of three islands, which rise from a sand-bank 2 miles long, N. by E. ¾ E. and S. by W. ¾ W.; the southern islet is about 1¼ miles eastward of cape Cabeceira. This bank is dry at most times of tide, but covered at high water; it is connected with the shore by the coral flat above mentioned. The outer reefs, which are in part awash at low water, extend half a mile to the eastward of the Pau bank, and 1½ miles to the southward of the southern and smallest islet, there forming the northern boundary of the north channel into Mozambique. From the depth of 5 fathoms, off the south extremity of Pau reef, the flagstaff of fort St. Sebastian bears W. by N. ¾ N. distant about 2¾ miles.

Tree island has straggling trees on its north-east extreme, none elsewhere. The other two islets of the group have no trees.

CAPE CONDUCIA is the north-east extremity of the peninsula of Cabeceira. Its shore is a little elevated (about 200 feet high), and bounded by cliffs, the only part that is so, except the south part of cape Cabeceira.

About a quarter of a mile N.E. of cape Conducia, the reef forms a small bight, and extends thence nearly straight to the north end of Tree island.

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* W. J. Olive, Master, R.N., 1847.

† Owen.

Between Treo island and the bar of Conducia, the soundings shoal gradually on approaching the reef.

CONDUCIA BAY and the port at its head is separated from port Mozambique, by the peninsula of Cabeceira. The entrance of the bay is 6 miles wide between Quitangonia island on the north, and Tree island on the south, with depths of from 8 to 20 fathoms or more. The inner part of the bay, which is the usual anchorage, has a navigable channel of about 1½ miles wide between Sombrero islet on the north, and cape Conducia on the south, 3 miles apart, from whence the bay extends about 6 miles westward to Bar point, with irregular depths, of from 20 to 5 fathoms. The soundings are more regular towards the head of the bay, decreasing from 11 to 5 fathoms within half a mile of the north shore.* Sombrero is a small rocky islet with one or two trees in the centre.

The anchoring ground in the bay is much reduced by coral flats all along its south side, which extend off more than a mile from shore between cape Conducia and Arab islet. A point of the sand nearly dries about a mile out from Arab islet, thence for the same distance, more or less, to near the entrance to the port, leaving a passage between its north extremity and the shallow water surrounding Bar point. From Sombrero islet the shoal ground extends to the southward 1¼ miles; and there is a 3½ fathom patch with Sombrero islet E. by N. and cape Conducia S. ¾ E. Along the north shore the rocks and shallow ground extend off about half a mile.

Directions.—Having made the land to the northward of Quitangonia, coast as close as convenient and haul round the south point of Quitangonia at the distance of three-quarters of a mile, and steer W. by S. ¾ S. for cape Conducia, which is the north-eastern cliff and elevated ground of the peninsula of Cabeceira; when the two little points (which are the only rocks to the westward of Sombrero islet) bear N. by W. ¾ W., and Table mountain is open to the westward of them, steer N.W. ½ N. and coast the northern shore. Sombrero island on with Quitangonia point appears a good mark for running up the bay until Arab islet on the south shore bears about S. by E., then steer by the plan, the lead, and the eye as convenient, or a vessel may take up a suitable anchorage.†

In entering Conducia bay from the southward with a commanding wind to stem the current, round Tree island as close as convenient, and steer N. by W. ¾ W. for Table mountain, just open to the westward of the two little points; and when cape Conducia bears W.S.W. distant 1¾ miles, steer about N,W. ½ N., and proceed as before, observing not to bring cape Conducia to bear eastward of South until Sombrero island is in line with Quitangonia point, so as to avoid the 3½ fathom patch.

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* G A. Stabb, Master, R.N., 1852.

† Owen.

Do not approach too near Sombrero islet, as the water shoals very suddenly.* In going in or out of the bay take the soundings from cape Conducia side, borrowing more on that shore than the other.‡

Anchorage.—H.M.S. *Lily* anchored in 5½ fathoms, with Sombrero islet in one with the south point of Quitangonia E. ½ N. easterly; Trees on Tree island S.S.E. ¼ E., easterly; and cape Conducia South, westerly. The *Lyra* anchored farther up the bay, in 5 fathoms, mud, with Sombrero island bearing E. ⅛ N.; cape Conducia S.E. by E. ¼ E.; Table mountain N. ⅜ E.; and the east end of Arab islet S.E. There is good anchorage in 11 fathoms, with cape Conducia S. by W. and Sombrero island E.N.E.†

Water.—There was in April a running stream N.E. by N. from the *Lily* anchorage, but watering was hard and slow work, as the water had to be carried to the boat in baricoes, the shore being shallow for a long distance out; but at high water there was less difficulty. In the month of November this stream was found to be dried up; a turn or two of water was then obtained from farther up the bay near the fishing stakes, but this was found to be brackish.

Fowls, eggs, and oysters were to be obtained at the *Lyra's* anchorage, and the natives anxious to sell them.

PORT CONDUCIA, at the head of Conducia bay is a land-locked harbour, a mile long by half a mile wide within Bar point, with no less than 4 fathoms water.

Conducia River, of which the port is the estuary, has its source in Table mountain, and is navigable for boats almost to the foot of the mountain.‡

Bar Point, is a dry narrow spit of sand with some wood or shrubs on it. This spit runs to the W.S.W., leaving a narrow passage with 10 fathoms water between it and the south shore.‡

Directions.—In entering port Conducia, pass to the northward of the Bar flats, which extend along the south shore of the bay, and, in the absence of a pilot, proceed carefully with the boats ahead sounding. The channel is tortuous, but in it there is nowhere less than 4 fathoms at low water.‡

Tides.—It is high water, full and change, at port Conducia at 4h. 15m.; springs rise 12 feet.

QUITANGONIA ISLAND, is about two miles north-east and south-west, by one mile or more wide. It forms the northern boundary of Conducia bay, and and may be approached pretty closely on its outer coast.‡ It has a long low rock off its south end seen when bearing about West.

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* G. A. Stabb, Master, R.N., 1852. † G. T. Hodges, Master, R.N., 1852. ‡ Owen.

PORT VELHACO, formed on the west side of the point of that name, and fronted to the south by Quitangonia island, is often used to avoid the port dues of Conducia. It is also better sheltered than Conducia bay from the tornadoes in the latter end of the north monsoon, which blow strongest from the north-west.* The port appears not to have been examined but there are 4 fathoms in the entrance, between Velhaco point and the island.

The COAST from Mozambique northward is at first low near the sea, becoming higher towards Fernando Veloso bay, the general trend of the land being N. by E. ½ E. from Quitangonia island to cape Melamo, a distance of about 22 miles. Of this part of the coast we have little or no information.

CAPE MELAMO, the southern headland of Fernando Veloso bay, is low, bluff, and rocky, and appears to be steep-to. About a mile south of the cape the coast changes to a high sandy beach with casuarina trees upon it, and continues so for 1½ miles to the entrance of Quisimajulo river. Off this beach shoal water appears to extend fully half a mile. The land at the back of the coast is about 300 feet high.

FERNANDO VELOSO BAY.—(Mazazima). This is a spacious but little frequented bay, about 40 miles to the northward of Mozambique. Its entrance is bounded on the north by cape Mocuo, and on the south by cape Melamo, being about 9 miles apart, nearly north and south: from this line the bay is upwards of 10 miles deep, the shore at its head running north and south,—forming a slight bend westward—for more than 6 miles.

The bay appears free from shoals, with depths of from 40 to 20 fathoms in the middle, and 15 to 5 fathoms near the shores. On the southern side, a ledge, which dries at low water, extends about half a mile from shore, with from 10 to 15 fathoms off it. A sandy flat extends in most places three-quarters of a mile all round the shores of this bay.

In the north-west angle of the bay, a deep inlet runs to the northward, called Belmore harbour; and the Fernando Veloso river runs in to the south-west angle of the bay.†

Appearance of the Land.—The land at the head of the bay is moderately high, with some hummocky hills, and to the north-westward of the bay are some remarkable saddle hills and a sugar-loaf peak.

On the northern side of the entrance, inside cape Mocuo, there is a very remarkable high hill, with a rather flat top, rising abruptly from the land beneath, which is level, and of moderate elevation. This hill bore

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* Owen.

† *See* Sketch of Fernando Veloso bay on sheet No. 1809.

N. 56° W., when just open to the northward of the point on the north side of the bay, the mouth of the bay being then open.*

When seen from the northward at a distance of about 15 miles, this hill resembles a brig or barque under sail so closely as to deceive even an experienced eye, but, on a nearer approach and different bearing, it changes its form.

Belmore Harbour.—The entrance to this harbour is difficult, there being no leading marks, the water discoloured, caused by the fresh water from a stream at the head of the harbour, which renders the reefs difficult to be seen, and the tides are strong.

The east shore of the harbour is mostly rocky, with sandy patches, until northward of West cove, when it is mangrove swamp as far as to the head. The west side is mangrove swamp with the exception of a sandy beach just inside the entrance, which forms a small bight, and is good seining ground. Give the mangrove points on the west side a good berth, as shoal water extends from them about a quarter of a mile.

The *Vulture* anchored off West cove in 7 fathoms, not quite half a mile from the west shore. Directly opposite this cove is a village, where a small supply of vegetables and fowls were obtained; but the inhabitants appeared very poor.

There is no trade carried on in Belmore harbour, and the locality does not seem to be healthy. A thick fog was experienced on the 25th March 1874.†

In Belmore harbour, the soundings are gradual from 14 to 4 fathoms at its head, but it has only been partially examined. The points of entrance should have a good berth, as shallow water extends off on both sides, that on the east upwards of a mile to the south and westward.

Anchorage.—H.M.S. *Mutine* anchored in 8 fathoms, about 4 miles from the entrance, and one mile off the southern shore, abreast of a small stream.*

Water.—The *Mutine* watered with her own boats from the stream abreast of her anchorage, obtaining 12 tons per day, but it was rather difficult to procure.*

Supplies.—Fowls, goats, ducks, and vegetables are to be obtained in abundance; also guinea fowls, venison, and a species of hare, but it requires some little time before the natives acquire confidence to bring the supplies from a distance. Wood is plentiful, and easily obtained in any part of the bay.*

Fernando Veloso River, which runs into the south-west corner of the bay, has a narrow entrance with 9 fathoms water, and opens into a fine basin, which, from the few soundings taken, appears deep enough for any vessel.* This used to be a great rendezvous for slavers, vessels being able to lie perfectly unseen from seaward, either here or in Belmore harbour to the northward. The natives state that the river is navigable many miles for dhows.†

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* Commander R. B. Crawford, R.N., and B. Renaud, Master, R.N., 1845.

† Nav. Sub. Lieut. T. C. Pascoe, H.M.S. *Vulture*.

Tides.—At Fernando Veloso bay, the probable time of high water at full and change is about 4 o'clock, with a rise of about 15 feet.

PINDA SHOAL.—From Fernando Veloso bay to cape Loguno, little is known of the coast, as it is generally given a wide berth, on account of the dangerous Pinda shoal. The east extreme of this shoal is placed in lat. 14° 15′ S., long. 40° 47′ 30″ E.; that is $5\frac{7}{10}$ miles to the eastward of the long. of cape Loguno. It extends 4½ miles from the coast, and the sea generally breaks on all parts of it, but we have no information as to its extent north and south. The shoal was sighted in H.M.S. *Brisk* from the northward, its green water being distinguishable from the foreyard, but the sea did not break on it.

The northern edge of the reef appears to be about East from cape Loguno. When just to the northward of Pinda shoal, a flat-topped perpendicular hill, which rises abruptly from the level land, bore W. by S. ½ S. There was a hill on each side of this one, the northern being conical, and the southern round topped.†

Pinda shoal extends a long way to the southward; it shows well and generally breaks along the east side, but near the south end several patches of green water which did not break were seen. The east point of the entrance of Belmore harbour bearing West, and in line with a high hummocky or round-topped hill, (the first one south of the three above described), appears to lead just to the southward of Pinda shoal. There are three small hummocks at the head of Fernando Veloso bay a little distance inland, nearly equidistant from each other apart, with level land between them; the southern hummock in line with or just open north of the east point of the entrance of Fernando Veloso river, leads well south of Pinda shoal, and is a good distant mark.§

CAPE LOGUNO (Rás Mwamba Koma), is the southern headland of Memba bay. It is of moderate height, about 80 feet near the sea, level at the top, with perpendicular rocky cliffs. The *Brisk* stood towards cape Loguno from the northward, until within half a mile; it appeared to be quite bold into the cliffs on the north side, but bordered eastward by the extensive Pinda shoal.

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* Lieut. H. Fairfax, R.N., 1862.

† Commander Crawford, R.N., 1845.

§ Nav. Sub Lieut. T. C. Pascoe, H.M.S. *Vulture*, 1874.

MEMBA BAY (Mwendazi) is an extensive inlet, between capes Loguno and Tapamanda (Ras Umlulu) which are 6 or 7 miles apart N.W. and S.E., with apparently no anchorage, except on the north shore, but it does not seem to have been examined. The only account we have of Memba bay is from H.M.S. *Nerbudda*, which vessel touched slightly on a coral reef at high water, going from 60 fathoms suddenly into 2½ fathoms, but no further particulars are given. This reef extends from the north side of the bay apparently 1¼ miles, and as the account mentions that it was high water, it is probable that at times the reef is uncovered at low water.

The *Nerbudda* appears to have anchored abreast of the mouth of the river Tembo (Mkubwa), in 12 fathoms, at about a mile from the north shore, and a mile or two to the westward of the reef which extends from the north shore. From this anchorage to the head of the bay sand flats border the shore, extending a considerable distance in some places.

The Umcomburi river runs into the sea on the south side of Memba bay. It has a deep entrance, and no bottom with 60 fathoms. Loguno or Nrogi peak rises about 5½ miles inland to the south-west of the entrance of the river.

Supplies.—During the *Nerbudda's* stay in Memba bay no provisions or water were procurable, but it is said that plenty of fish, wood, and water are to be obtained.

Tides.—The master of the *Nerbudda* gives the time of high water, full and change, 3h. 45m; rise at springs 20 feet. If correct, this is a greater rise and fall than at any other place on the east coast, except Sofala.

SANGONE BAY appears by the chart to be in lat 13° 58′ 30″ S., about a mile deep, with an entrance about half a mile wide, but we have no information about it. When passing this spot at a distance of 2 or 3 miles the entrance was not very distinct, neither was the coast reef observed which is represented as extending to the northward from Sangone point, the north point of the bay.

COAST.—From Memba bay to Sorisa point, a distance of about 37 miles, the land is more striking than any other part of the coast. It is generally level and of moderate elevation, about 200 feet, decreasing towards the coast, where it is low. From the level land, about between latitudes 13° 45′ S., and 13° 55′ S., several high craggy peaks, which Owen justly compares to the ruins of some giant city, rise abruptly to a height of 800 or 1,000 feet; these peaks assume every variety of form of sugar-loaf, cone, and round or square topped pillars, in some cases appearing to overhang from their bases. From Almeida bay to cape Tapamanda, the *Brisk* stood along shore at a distance of 2 or 3 miles; it appeared to be free from reefs and tolerably bold-to.

ALMEIDA BAY is formed by Mancabale and Indujo reefs, which make it a safe and commodious anchorage, with from 6 to 4 fathoms water. The principal entrance to Almeida bay is to the southward of Indujo reef, between which and the coast, the depths vary from 7 to 10 fathoms.* There is also a passage a quarter of a mile wide, with from 2 to 11 fathoms water, between Indujo and Mancabale reefs. The deepest water in this passage is nearest to Indujo reef.†

Minsangegy River (Chahoondi) is about 3½ miles to the south-west of Indujo reef, and about 2 miles to the north-west of the south point of Almeida bay.

MANCABALE REEF.—Sorisa point is low, sandy, and forms the south extreme of Lurio bay. From the north side of this point, the Mancabale reef skirts the south-east face of the point at a distance of more than a mile, and projects 5 miles to the southward, protecting the anchorage of Almeida to the westward of it.

From a position about half a mile outside the reef, in 14 fathoms, Pico Fragos, a remarkable craggy peak, bore N.W. by N., a large peak W. ½ S.; a pillar peak W. ¾ S., and another high peak S.W. ¾ W.* H.M.S. *Brilliant* obtained soundings at about one or 1½ miles outside Mancabale reef.‡

INDUJO REEF lies a mile to the southward of Mancabale reef, leaving a ship channel a quarter of a mile wide between the two.* It is about a mile in extent east and west, its southern part being about 6½ miles to the southward of Sorisa point.

LURIO BAY, between Sorisa point on the south and Pando point on the north, a distance of about 8 miles,‡ has from 5 to 15 fathoms water. The land is all low near the sea, with thick jungle, but there are high craggy peaks in the interior.‡

Lurio River is in the southern part of the bay: the sea is discoloured by its water for some miles from its mouth.*

COAST.—To the northward of Lurio bay the land is of moderate height and continues so from Badgley point to Maunhané point, a distance of about 25 miles.

This part of the coast is fronted by a sandy beach and a reef, which averages in extent about 1½ miles from shore.§

XANGA MREBWI RIVER.—At this spot, which is about 6 miles to the southward of Maunhané point, there appears to be a gap in the reef with a deep water channel. The land here is low, and lined with trees almost to the water's edge.

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* Owen. † *See* Plan of Almeida Bay, No. 655; scale, m = 0·5 inch.

‡ W. J. Olive, Master, R.N., 1847. § Commander W. R. Hobson, R.N., 1862.

It was about Xanga Mrebwi river that H.M.S. *Pantaloon* got on shore in 1862, remaining on the reef 7 days, and narrowly escaping becoming a total wreck. She was endeavouring to pick up an anchorage after dark on the bank off Maunhané point, but being a few miles to the southward she went from no bottom at 15 fathoms (with picked leadsmen) on to the reef without obtaining soundings. There appears therefore to be a deep spot outside the reef, just where she unfortunately grounded. There are soundings off the reef in other places, as the ship, after being floated, was anchored in 5¼ fathoms, and subsequently moved off to 11 fathoms. The bottom outside the reef is sand, but apparently only a thin layer of it over coral, as the anchors used to heave the vessel off did not hold well.

During the time the *Pantaloon* was on shore the stores were landed with considerable difficulty and risk, two boats having been upset, and two lives lost thereby. The beach is of a quicksand nature: anything left below high-water mark was completely swallowed up in one tide.*

The thieving propensity of the natives occasioned a good deal of trouble; they stole everything they could find, and at one time assembled about 700 strong, as if they meditated an attack, but a shot fired over their heads dispersed them.*

No water was to be procured within 5 miles of the encampment of the crew, but they ingeniously contrived to fit up the ship's condenser on shore, with the upper deck tank for a boiler, and so supplied the ship's company.

The rise and fall of tide at springs during the ship's stay there did not exceed 10 feet.*

MAUNHANÉ POINT is rather bluff, but runs off to a low rocky point, from which the reef extends to the eastward two-thirds of a mile.† The sea breaks upon this reef, and it is also visible from the discolouration of the water.

POMBA BAY (MWAMBI).—The entrance to Pomba bay about 5 miles to the westward of Maunhané point, is about 1¼ miles across between North and Herbert points. The basin inside these points is one of the finest harbours on this coast, being about 8 miles north and south, by 5 miles deep, with sufficient water for the largest ships in most parts.‡ The country surrounding the bay is composed of fertile plains and woods, and the climate is said to be good.§ The land wind generally blows out of the bay till 7h. or 8h. a.m. by which even a steam vessel can sail out. There is good fishing with the seine.

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* Commander W. R. Hobson, R.N., 1862.

† *See* Admiralty chart:—Pomba bay to Ras Pekawi, including the Querimba islands, No. 657, scale $m = 0 \cdot 34$ inch; and Plan of Pomba bay, No. 656, scale $m = 1 \cdot 0$ inch.

‡ Owen. § Statistics of Portuguese Possessions.

North Point (the north point of entrance being so named) is a moderately high bluff, covered with trees and jungle. It is very steep-to, there being 20 fathoms within 100 yards of it.

Herbert Point, the southern point of entrance, runs off low, but with a high hill at the back of it: it may be approached within a quarter of a mile. There was a flagstaff on the point.

From Herbert point the shore trends to the W.S.W. 1½ miles to Sandy point, which is low and of white sand, with shoal water extending from it about 4 cables to the westward.

OUTLYING DANGERS.—The shores of this large basin appear to have numerous rocks off them, and not to have been fully examined, but the principal dangers to ships entering the bay are three in number, viz.:—

Mutine Shoal is a patch of coral, a cable long, north and south, with several rocks on it rising to within 3 feet of the surface at low water, and from 12 to 14 fathoms round it. The shoal lies with North point bearing E. ½ S.; small sandy beach near village N.N.W., 2¾ miles; and Maunhané point about 2 ship's lengths (*sic*) open of Herbert point.[*]

Penguin Shoal, a patch of coral about 40 yards across, with 4 fathoms on it at low-water springs, lies about 4½ cables S. by E. ½ E. from the Mutine shoal, with North point bearing E. ¼ N., $2\frac{6}{10}$ miles, and Herbert point, S.E. by E. ½ E., $2\frac{2}{10}$ miles.[†]

A coral Patch, about a mile to the southward of Mutine shoal, was discovered by H.M.S. *Mutine*. It is about a cable in extent north and south, with 6 feet on it at low-water springs. From this patch, Sandy point bears S.E. ½ S., nearly 1¼ miles.[*]

Anchorage.—Outside Pomba bay there is no anchorage, except on Imbo bank, hereafter mentioned. Between the points of entrance there are from 30 to 40 fathoms water, and not less than 20 fathoms until 2 miles within the points.

To proceed to an anchorage in the northern part of the bay, and being abreast of North point, distant half a mile, steer N.W. ½ N. for about 3 miles, and anchor in 9 or 10 fathoms, black mud and good holding ground, with Maunhané point, just touching North point, S.E. ½ E.; Sandy point S. ½ E.; and the sandy beach near the village W.N.W. In anchoring in this part of the bay avoid a 5-fathom rocky patch which was discovered by H.M.S. *Pantaloon*, with Sandy point bearing South, and the sandy beach N.W. by W. ¼ W.

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[*] B. Renaud, Master, R.N., 1845.

[†] Lieutenant J. G. McHardy, R.N., 1861.

If anchoring in the north-eastern point part of the basin, observe that the soundings, about 1¼ miles inside North point, and nearly half a mile from shore, diminish suddenly from 10 to 2½ fathoms, and then one fathom. Observe also that off a small sandy bay, about 1½ miles inside North point, and half a mile from shore, there is a coral patch with 6 feet on it at low water and 12 fathoms all round it.

If proceeding to anchor in the southern part of the basin, take care to pass clear either side of the coral patch extending from Sandy point. There is, no doubt, good anchorage in the southern part of the bay, but care must be taken not to approach the south shore within 1¼ miles, nor go within the 5-fathoms line of soundings.

The western part of Pomba bay is foul, and shallow ground extends off nearly 2 miles.

Supplies.—Bullocks are to be obtained in small numbers, also poultry and vegetables; and wood may be cut here. Deer and other game are plentiful in the vicinity.* The village in the north-west part of the bay consists of a few huts inhabited by Arabs, and subordinate to the Sultan of Zanzibar; another village to the southward is under the dominion of a native chief. Besides Arabs, the inhabitants of Pomba bay are Banyans and natives, and a small detachment of Portuguese troops. In 1857, some colonists were sent from Portugal to a place called Munguete, about 3 miles from the shores of the bay.†

Water.—Accounts differ as to the practicability of watering ships at Pomba bay, but the general opinion appears to be that water can only be obtained in small quantities. There are, however, two inconsiderable rivers in the north-east part of the bay, which are barely navigable for boats, and a larger river in the south part of the bay.

Tides.—It is high water, full and change, at Pomba bay at 4h. 0m.; springs rise 15 feet; neaps rise 11 feet; neaps range 7 feet.

Imbo Bank.—The so-named bank outside Pomba bay is said to have good anchorage on it in 10 fathoms, about 2¼ miles to the north-west of Maunhané point, with the extreme of North point bearing about W. by N. ⅓ N.

The COAST from Pomba bay continues moderately high for about 15 miles northward, when it becomes low and thickly covered with trees for 8 miles to Quizeeva island which from the S.S.E. appears like two small islands; there is, however, high land in the interior of Areemba, which may be seen 40 miles.‡

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* Commander Hope, R.N., 1845.
† Statistics of Portuguese Possessions.
‡ W. B. Edwards, Master, R.N., 1853.

Mugarumo River appears to run into a shallow bight in lat. 12° 42′ S.; this bight has only half a fathom water at its mouth. Its vicinity and the coast near it must be approached with caution, as it has not been minutely examined.

AREEMBA HEAD, about 20 miles northward of Maunhané point, may be considered the southern boundary of the Querimba islands, as the first of these, called Quipão, is united with the south extreme of Areemba head by a reef with forms an inlet or bay to the westward of Quipão, with from 5 to 4 and 3 fathoms water.

The channel to this cove appears to be nearer to Quipão than to the main, the reef extending some distance from the latter, with soundings of 4 and 3 fathoms beyond it.

On the north side of Areemba head, between it and the chain of reefs and islands to the northward, there is a passage of 5 to 3 fathoms into port Areemba, which is formed inside the reef and island of Quizeeva.

Port Areemba appears to be a secure harbour for small vessels. It is one of the Portuguese settlements, and has about 400 inhabitants in all: it exports grain, vegetables, fruit, and woods.* Areemba fort stands on the shore in the south-western part of the anchorage. Areemba head when seen from the north-east is very conspicuous, having six or seven hillocks on it.

QUERIMBA ISLANDS.—The Querimba or Aswatada islands extend from Areemba head to cape Delgado. These two headlands are nearly in the same meridian, and 117 miles apart. In this space the outer reefs and islands extend in some places as much as 13 miles from the main land, and in most parts more than 10 miles, but to the southward of lat. 12° S. they nowhere exceed 8 miles from the main.

The main land inside the Querimba islands, being generally low, will rarely be seen when coasting outside the reefs; this, and the fact that the sea faces of the reefs are generally steep-to, necessitates much caution in approaching this part of the coast even by day.

The general trend of the line of outer reefs is North and South (true). There are eighteen or nineteen openings through the outer reefs into a still greater number of secure ports or convenient anchorages.†

The general character of the Querimba islands and their reefs is that the sea faces are very steep, having rarely any practical soundings even alongside them, but no sooner has a vessel passed the line between their eastern extremities than soundings may be expected, and in convenient depths for anchoring.†

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* Statistics of Portuguese Possessions.

† Owen.

The dominion of the Portuguese seems to be acknowledged by the natives as far as lat. 11° S., but to the northward of that the whole coast is subject to Sowaheli chiefs or to Arab usurpation.* The Portuguese have six principal settlements between Pomba bay and cape Delgado, viz.: Areemba, Montepes, Quisanga, Lumbo, Pangane, and Mazimbwa, besides which, four of the Querimba islands are inhabited, viz.: Foomo, Ibo, Querimba, and Matemo.†

The Querimba islands are generally low, but some have a diversified surface of hill and dale, whilst many are mere corallets. They were most of them in high cultivation about a hundred years ago, but having been so long exposed to Arab and Malagash depredation, they have returned to their pristine wilderness state. They are consequently in general well wooded and easily seen from seaward; but as no soundings are to be had to give notice of approach, it would seldom be safe to try to make them by night; indeed, this observation applies generally along the coast from Mozambique to lat 3° S., with a few exceptions.*

The outer coral reefs of the Querimbas almost all dry at low water, or at half tide, like those of cape Delgado.*

FOOMO ISLAND, the north point of which is in lat. 12° 31′ S., is connected with Quizeeva by a coral reef, and the two islands together form the eastern side of a well-sheltered but rather shallow anchorage between Areemba head and Manangoreshy point. The entrance to this anchorage is between Areemba head and Quizeeva, the passage between Foomo and the main being only a boat channel. Foomo is one of the islands which the Portuguese inhabit; it has a population of about 100.†

PENGUIN ISLAND, to the northward of Foomo, is small and woody. There is a reef with not more than 2½ or 3 fathoms on it, S.S.E., full half a mile from the island.

H.M. Brig *Penguin* stood in between the reefs of Samucan and Foomo, and got soundings in 14 fathoms, when at a fair distance from the reef off Samucan; but thence standing towards Foomo, the soundings were lost after two or three casts. The vessel then stood towards Penguin island with a boat ahead, and anchored when soundings were obtained in 13 fathoms, coral bottom, with the south point of Penguin island N.W. by N. three-quarters of a mile; outer edge of Samucan reef East 1¼ miles; south point of Querimba N. by W. ¼ W. 2½ miles; and east extreme of Foomo S. ¾ W. 2¾ miles. This anchorage might be available in the north-east monsoon. It appears to have been a place for shipping slaves.‡

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* Owen. † Statistics of Portuguese Possessions.

‡ W. B. Edwards, Master, R.N., 1853.

Montepes Bay, contained between Manangoreshy and Quisanga points, has been but slightly examined. There is apparently deep water into it between the reefs of Foomo and Penguin islands, but a rock lies midway close to a depth of 33 fathoms.

At the head of the bay is the Portuguese settlement of Montepes, in lat. about 12° 29′ S., at the mouth of the river of that name. The village consists of miserable huts, and a population of about 650. The mouth of the river forms a sheltered boat harbour.*

SAMUCAN ISLAND appears to be connected with Querimba and with Ibo by a coral bank, Samucan being the southernmost of the three.

QUERIMBA ISLAND is about 3½ miles long north and south by 1½ miles wide: it is low and woody, has good well water, and is the most fertile of the Archipelago. Querimba was formerly the capital of the district, but now has a population of about 200 of all denominations.* Its trade at the time of Owen's survey was only in slaves.

QUISANGA POINT, in lat. about 12° 24′ S., is a projection of the main land towards Quirambo, from which it is separated by a channel which is scarcely navigable for canoes at low water. Quisanga is one of the Portuguese settlements; it has about 200 well-constructed wooden houses, and is inhabited by about 2,000 persons.

IBO ISLAND is between 4 and 5 miles in a north-east and south-west direction, and nearly divided into two by a deep inlet open to the N.N.W. The town and fort of St. João are on the eastern side of the inlet and near the northern part of the island. This is the northern of Portuguese ports, and the principal establishment next to Mozambique.†

Ibo bluff, the north-east extreme of the island, is moderately high, with a lighthouse on it, and may be seen from the deck 14 or 15 miles off. Ibo may also be distinguished from the others of this chain of low islands by its white fort, which when bearing about S.W. shows a long front. The cocoa-nut trees in the town are easily distinguished at a distance of several miles.

The south-western half of Ibo island is called Quirambo; it is about 3½ miles in a north-west and south-east direction, and almost joined to the north point of Querimba island by islets and rocks. To the north-west of Quirambo there is well-sheltered anchorage in 4 fathoms, a mile or two from the main land, but the entrance to this does not appear to have been much examined.‡

LIGHT.—The light exhibited at the north-east point of Ibo island is a *fixed* white light, 51 feet above the level of the sea, and visible in clear weather from a distance of 12 miles.

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* Statistics of Portuguese Possessions. † Owen.

‡ *See* Plan of Ibo harbour, No. 1768; scale, $m = 0{\cdot}6$ inch.

Buoys.—The Mujaca shoal bordering the north side of Ibo island extends northward about 1½ miles, and is marked by two buoys; one on the extreme, north of the lighthouse, the other on the extremity of the shoal north of fort St. João. Vessels should pass about half a mile northward of the buoys.

ST. GONSALO SHOAL or Corea de San Gonsalo, forms the north side of the channel into Ibo roads. It is of a serpentine form, extending nearly 2½ miles E. by N. and W. by S., and at low water shows as a dry sand bank.* It may generally be seen either by the discolouration of the water or by the sea breaking, but at times the sea only breaks at intervals.†

The channel to the northward of St. Gonsalo, between it and Matemo reef, is about half a mile wide, with depths of from 12 to 24 fathoms.

Ibo Harbour.—The creek which runs up to the town forms a harbour for dhows, having depths of from 1½ to 2 fathoms; but on the bar, which is about a mile from the shore, there is only three-quarters of a fathom at low water.‡ The upper part of the creek, for a mile or more in extent, is only a shallow lagoon.

The Town of Ibo consists of 15 or 20 stone houses and 400 huts. The population, composed of Portuguese, Arabs, Banians, and slaves, amounts in all to about 2,500 persons, including the garrison, which consists for the most part of creoles and negroes.§

Fort St. João star-shaped and constructed of stone, is armed with 15 iron and 2 brass guns, and garrisoned by a company of infantry; it is in lat. 12° 20′ S., long. 40° 34′ 45″ E. The defence of the town is completed by two other forts, called St. José and St. Antonio, both also of stone, and with, respectively, 7 and 6 guns.§ These forts are considerable, and in good repair. This was formerly a great slave depôt, and at the time H.M.S. *Gorgon's* boats were here in 1861, there were 1,000 slaves in the fort, ready for exportation.†

The sickly season is from the middle of January to the middle of March, during which time there is much rain, with thunder and lightning.‡ The fever at that time of year is very fatal, and the negroes are not exempt from it.

Directions.—The channel between St. Gonsalo and the Mujaca shoal bordering the north side of Ibo is the usual one for proceeding to Ibo roads; it is about a mile wide, with depths from 15 to 6 fathoms. To enter by this channel bring the south end of Matemo to bear N.W. by N., and Ibo fort S.W. by W. ½ W., when the land of Quirambo will be open to the northward of the fort; then run in W. ½ N. and anchor in 4½ fathoms, with the fort bearing from S. ½ W. to S. ½ E., distant about 2 miles.‖ Deeper water may be obtained by anchoring 2 or 3 cables farther to the northward.

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* Commander W. E. A. Gordon, R.N., 1858.

† Commander J. C. Wilson, R.N.

‡ Owen.

§ Statistics of Portuguese Possessions.

‖ W. S. Luke, Master, R.N.

H.M.S. *Castor* had good anchorage in 6 or 7 fathoms, with Ibo bluff S.E. by S., and the east end of Matemo N.E. by N. The anchorage is good, but partly exposed to easterly winds, and the tides run strong.

When entering Ibo, it is well to be guided partly by the eye, as the reefs generally show well, particularly the Corea de St. Gonsalo on the north ; borrowing a little on this latter shoal will therefore ensure safety from the reef extending from Ibo island. In case of necessity, vessels may anchor outside the reefs of Ibo and St. Gonsalo, and also off the edge of the reef joining Ibo and Querimba, but only in case of being becalmed. Soundings are said to extend 2 miles seaward from the islands of Matemo, Ibo, and Querimba.

It is stated that brushwood has grown up in front of the fort entirely concealing it from view, but for two hours before and after low water, the reefs and dangers on both sides of the channel are above water and clearly defined.*

Supplies are very scarce, and neither stock nor vegetables are to be procured. Water is difficult to obtain, and of indifferent quality.

Tides.—It is high water, full and change, at 4h. 15m. ; springs rise 11 feet.

The tides run strong through the channel between Ibo and Gonsalo reefs, the ebb setting rather towards the Ibo side, and the flood inclining to the northward.†

Cramacoma River runs into the sea in lat. about 12° 17′ S. The Portuguese have a settlement called Lumbo at the mouth of this river, which has a population of 615 persons.‡

MATEMO ISLAND, next to the northward of Ibo and next to it in size, is about 4½ miles north and south by 2 or more wide. Matemo is one of the Portuguese settlements, and has a population of about 110 persons. Of the four inhabited islands, this is the least fertile, and it has no water.‡ This island may be distinguished from Ibo by its being low, with straggling trees along its whole length ; by the high white sand beach on its south-east side, and the small rocky islet off the south-east point ; and by there being no cocoa-nut trees visible from seaward ; there is a sand hill about one-third the length of the island from the south end, which shows well when the sun is shining on it.

Ibo is higher, has denser trees, and a cocoa-nut grove on its northern side. The main land to the northward of Matemo is level, and high for this part of the coast, being visible at 16 or 18 miles, and will be seen before Matemo when standing in from seaward. Matemo is not visible from the deck more than 9 or 10 miles.

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* Commander Adams, H.M.S. *Nymphe*, 1871.

† W. S. Luke, Master, R.N., 1859.

‡ Statistics of Portuguese Possessions.

Commander Hawker, of H.M.S. *Orestes*, recommends this island as a convenient rendezvous when cruising in the vicinity, on account of there being anchorage under it sheltered from either monsoon, from which it is easy to sail in and out; the tides, however, run strong about here. Between Matemo and the main the soundings appear shallow, diminishing from 4½ to 2 fathoms near Envie shoal, which borders the coast, but there is a narrow 5-fathom channel all the way.

H.M.S. *Lyra* anchored on two occasions off the north extreme of Matemo, viz., in 9¾ fathoms, with Das Rolas N.W. by W. ⅝ W.; north-west extreme of Matemo S.W. ¾ W.; islet off south-east extreme of Matemo S. ½ E.; and on the other occasion in 7½ fathoms, with the north-east extreme of Das Rolas N.W. by W. ⅛ W., and the extremes of Matemo S.W. ⅛ S. and S. by E. ¼ E.

The COAST from abreast Ibo island to Quirinuzi point is moderately high, and higher still from the latter to Pangane point. At the back of this part of the coast is a range of hills, visible 20 miles from the coast; they terminate to the southward in about the same latitude as the south end of Matemo island; the south end of the range is bluff, with a conical hill just to the southward. This conical hill is the distant peak given as the mark (bearing W. by S. ½ S.) which leads southward of Das Rolas island. To a vessel approaching from the northward the conical hill is not visible until it is in line with the north extreme of Das Rolas island, as it is shut in by the range of hills before mentioned. Thence northward to cape Delgado the main land is seldom seen from outside the islands and reefs.*

DAS ROLAS.—This small island lies about 2½ miles to the northward of Matemo; it is low and wooded, which is chiefly low brushwood. The north-west point is sandy, and affords the best landing; the reef extends to the northward from the sandy beach fully a third of a mile.* There is good anchorage in from 7 to 9 fathoms, with Das Rolas bearing N.E. by N., distant half a mile; north-east point of Matemo S.E. ½ E.; Sangane point North, and a peak inland W. by S. ½ S. This is a very convenient anchorage, as a vessel can always work out; there is moreover generally a land breeze in the morning.†

To proceed to this anchorage, steer for the north-east point of Das Rolas on a W. by N. course, until the peak on the mainland (which is some distance in the interior) bears W. by S. ½ S., then steer for it. The reefs on each side are easily seen. When the small island off the south-east part of Matemo is shut in with Matemo, soundings will be obtained in 11 to 13 fathoms; from thence the water will gradually shoal to 4½ fathoms, when in a line between the north-east points of Das Rolas and Matemo; after passing which, the water gradually deepens again to 8 and 9 fathoms.*

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* Nav. Sub. Lieut. T. C. Pascoe, H.M.S. *Vulture*, 1874.

† W. B. Edwards, Master, R.N., 1853.

In going in do not haul up to anchor under the lee of Das Rolas until Sangane point (which is low, white, and sandy) comes well open to the westward of it; in order to avoid a reef which extends nearly a mile from Das Rolas.*

Wood is easily obtained on Das Rolas, but no water, nor are there any inhabitants. Stock can readily be procured from the river Quirinuzi on the main, which is but a short distance off.*

Tides.—It is high water at Das Rolas, full and change, at 4h. 45m.; springs rise 10 feet.

SANGANE POINT, on the main, is a low white sandy point,* with a reef extending from it nearly 2 miles. In about the latitude of Sangane point, and from 4 to 7 miles from land, there is an extensive reef about 3½ miles in length E.N.E. and W.S.W. by a mile in breadth. H.M.S. *Lyra* anchored between this reef and Mahato island to the north of it, in 11 fathoms, with Molandulo island bearing W. ¾ S., the east extreme of Mahato N.N.E. ⅞ E., and Inhate island N. by W. ⅝ W.

PANGANE POINT.—A reef (in the middle of which is the small island of Inhate) extends 1½ miles from the point, nearly joining the south-west end of Mahato reef. The passage between Mahato reef and the reef from the main, is only fit for dhows, having but one fathom in it at low water. The Portuguese have a settlement at Pangane point, which has a population of about 320 persons.

MAHATO ISLAND, lying off Pangane point, has an extensive reef all round it, except on the west side, where there is a smooth anchorage for dhows.

PANTALOON SHOAL, in lat. 11° 53′ 40″ S., long. 40° 36′ E., is 1½ miles in extent east and west, by half a mile north and south. The soundings on it are irregular, from 6 to 2½ fathoms, the bottom being sand and coral. It lies nearly midway, and in a line between Mahato and Mattos islands, and about a mile to the southward of the anchor in the Admiralty chart.†

A Shoal lies about 1½ miles westward of the Pantaloon shoal: it is a sand-bank just awash at high tides, but generally visible. This bank is steep-to on its west side, but a circular coral reef, which has 6 or 8 feet water, extends from the bank about three-quarters of a mile to the northward, one mile to the eastward, and three-quarters of a mile to the southward.*

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* W. B. Edwards, Master, R.N., 1858. † Commander Hyde Parker, R.N., 1849.

Another shoal patch with one fathom water on it, lies W. by N. ½ N., about 3½ miles from Pantaloon shoal, with Ras Pekawi bearing N. ½ W., distant about 2½ miles.

To the northward of Pantaloon shoal there is good and clear anchorage.

RÁS PEKAWI or PEGUIN, in lat. 11° 51′ 10″ S., long. 40° 31′ E., is a low sandy point, with a clump of firs on its extremity 70 feet high; half a mile off, and connected with the point by a reef, is a bushy islet, 17 feet high.†

Kisanga Island, 20 feet high, is sandy, covered with brushwood, and visible 8 miles; it lies E. by N. ½ N., 3½ miles from Rás Pekawi, and on the western edge of a reef, which extends 2 miles in a S.E. and N.W. direction.‡

MDJUMBI or MATTOS ISLAND is low and thickly wooded, about half a mile in length, E. by S. and W. by N., and a cable in breadth; near its south-western end are two tall trees; these are the first objects seen when approaching the island, and resemble a two-masted vessel. It is surrounded by a reef extending 3 miles in a north-east, 1½ miles east, and one mile in a southerly direction.

Between the reefs of Kisanga and Mdjumbi there is a channel with from one to 3 fathoms water, but fit only for boats.

COAST.—From Rás Pekawi to Rás Nenumba, the coast for the first 4 miles consists of a sandy beach, with numerous villages, but the remainder is mangroves, intersected by several creeks.

A wooded range of hills 250 feet high extends parallel to the coast, 2 or 3 miles from the shore. There is a remarkable yellow patch on the side of this range, 150 feet above the sea, 1½ miles south of Rás Nenumba. It is, however, difficult for a stranger to recognise when the sun is to the westward.

Shore Reef.—The shore reef extends 2 miles east of Rás Pekawi and 1¾ miles east of Rás Nenumba; between these points it takes the direction of the coast, but with a varying distance of 3 cables to 1½ miles.

Supplies.—A few fowls may be bought in the villages north of Rás Pekawi by giving two days notice, but the natives will not come off to a ship at anchor at Kisanga or Mdjumbi.

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* Commander Hyde Parker, R.N., 1849.

† The information relating to the coast and anchorages between Rás Pekawi (or Peguin) and cape Delgado, is by Nav. Lieut. J. W. Dixon, H.M. surveying vessel *Nassau*, 1875.

‡ *See* Admiralty chart:—Rás Pekawi to cape Delgado, with views, No. 658; scale, $m = 0 \cdot 85$ inch.

Anchorage.—The anchorage west of Kisanga may be approached with safety either from the north or south, care being taken if entering by Mdjumbi Pass to avoid Gray rock. A good anchorage may be obtained in 8 fathoms sand, and shell, half a mile from the reef, with the following bearings: Mdjumbi tall trees in line with Kisanga island bearing East, and Rás Pekawi S.W. by W. ¾ W.

GRAY ROCK having 1½ feet on it at low-water springs is steep-to, and lies in the fairway to the anchorage off Kisanga island. From the rock Kisanga summit bears S.W. by S., and Mdjumbi high trees S. ⅞ E., 2$\frac{6}{10}$ miles.

MDJUMBI PASS.—The opening between the reefs of Mdjumb and the reefs of Kero Nyuni is 4 miles wide and perfectly clear, the heavy surf on the edges of the reefs marking the channel; the mainland will show very indistinctly, and Mdjumbi island will be clearly visible.

Mwamba Mcholi, a coral reef drying at low water, is circular in form and 4 cables broad. From its centre, Seli-Seli rocks bear N. ⅝ E., Kero Nyuni N.E. ¾ E., Mdjumbi high trees S.S.E. ½ E.

The COAST from Rás Nenumba to Rás Yamkumbi is low and swampy, fringed with mangrove, with numereus creeks; the sudden break in the hills at the back forms the most conspicuous feature of the coast.

Mto Marari is the only creek in this locality that has no bar across the entrance; boats drawing 2 feet can enter at low water; there is deeper water inside. A large village probably exists on its banks, as a great number of dhows were seen to enter and leave the creek.

Mud and sand flats extend from half a mile to 1½ miles off the shore, with coral and boulders scattered over them.

KERO NYUNI or ZANGA, a small island 20 feet high, covered with castor-oil bushes, lies on the north-western extreme of Mwamba Wadiazi.

SELI-SELI ROCKS.—At 2 miles eastward of Rás Yamkumbi, and connected with it by a reef, are three flat-topped coral rocks, 10 feet high.

MWAMBA WADIAZI or PASSEROS is a square-shaped reef, extending 5½ miles to the eastward, and 4 miles to the southward of Kero Nyuni. It is composed of coral with numerous sand cays on it, the rocks uncovering in parts at low water, and the cays at half ebb; its northern, eastern, and southern faces are steep-to, but its western side is broken into a series of gullies with detached masses of coral, with one and 2 fathoms water between them.

Anchorage. — The sheet of water enclosed between Mdjumbi, and Kero Nyuni islands, and the mainland, with the exception of the dangers mentioned above, has anchorage all over it, in from 5 to 15 fathoms.

The water shoals in the northern part over a bar with from 1½ to 3 fathoms water on it, connecting Seli-Seli rocks with Mwamba Wadiazi. The bottom off the entrances of the various creeks is mud over coral, but in the outer anchorages it is sand and coral.

A good anchorage during the southerly monsoon is in 6 fathoms, sand and coral, one mile north of Kero Nyuni, and for a small vessel during the northerly monsoon, 5 cables S.W. by W. of the same island.

Tides and Current.—It is high water at Kero Nyuni, full and change, at 4h. 15m.; spring rise 13 feet. The tides inside the islands are weak and irregular, being greatly influenced by the winds; but the usual southerly current is experienced at a distance of 10 miles outside the reefs. *See* page 250.

The COAST from Rás Yamkumbi to Rás Ulu, about 12½ miles to the northward, is covered with mangrove trees, and seldom seen from outside the islands. The coast reef borders the shore from three-quarters to 2 miles distant.

The mouths of the creeks on this portion of the coast are dry at low water.

Crawford Reefs are several patches of coral which dry at half ebb, lying 3 miles off the shore between Rás Yamkumbi and Rás Ulu, with only one to 2 fathoms between them and the coast reef.

KERO NYUNI PASS is 3¼ miles wide between the reefs; it is deep and clear with the exception of Mwamba Kizingiti near the western end of the pass; a channel exists to the northward and southward of this danger.

Mwamba Kizingiti, a small patch of coral drying only at low-water springs, may be generally known by the sea breaking on it. From it, Seli-Seli rocks and Kero Nyuni are plainly visible, and bear W. ¼ S. and S. ½ W. respectively.

MWAMBA WANUNI is 3 miles long in an E. by S. and W. by N. direction and one mile broad; a small detached shoal lies off its western edge, with a boat channel between. Mwamba Wanuni dries in parts at half ebb, showing a high sand-bank. If approached with caution from seaward the lead will give timely notice, 7 to 8 fathoms being found 3 cables distant.

NAMEGUO PASS to the northward of Mwamba Wanuni is 1¾ miles wide between the reefs, and clear of danger. It is the best pass for a stranger to enter by; the reefs show plainly, and the bottom is even, with fair anchoring ground over the whole of it. If the weather be moderately clear Myonji summit will be seen to the N.N.W.

Mwamba Majiwe Kubwa lies 1½ miles to the north-west of Mwamba Wanuni, with a 5-fathom channel between them. On the north-west portion of the reef is a small sand cay, which is only covered at high-water springs.

Fungu Lamkunama, a small coral reef, with a sand cay on its western end, uncovers at low-water springs; it is connected with Crawford reefs by a bank of 5 fathoms; a 2-fathom patch lies half a mile westward of the cay.

There is a narrow but clear channel with 6 to 9 fathoms water, between Fungu Lamkunama and Mwamba Majiwe Kubwa.

Chapman Reef, 1½ miles to the northward of Fungu Lamkunama, is a coral shoal, three-quarters of a mile long east and west; it dries at low-water springs, and has deep water all around.

FUNGU NAMEGUO is an extensive coral reef, 4 miles long, in a N.E. and S.W. direction and 2 miles broad; its north-western edge lies 9½ miles from Rás Ulu; there are numerous sand cays on it; the northernmost one is covered at high-water springs, when the sea breaks heavily on it.

Its south-eastern and eastern edges are steep-to, but 9 and 10 fathoms sand and coral are found half a mile from its north and north-eastern end. When there is any wind a cross sea is generally experienced off the eastern edge of this bank.

Appearance of Land.—From the easterm edge of Fungu Nameguo, if the weather be moderately clear, Myonji summit and the higher parts of Tambuzi island will be seen.

RÁS ULU or VELA.—At the southern extreme of Mazimbwa bay is a mangrove point, 80 feet high. It makes as a series of flat ridges.

A reef extends upwards of 5 miles to the south-east of this point, with several detached pieces on its southern side; the rocks and shoal water extend a mile from its north-eastern edge into Myonji pass.

Myonji Island.—At 2½ miles to the E.S.E. of Rás Ula, Myonji island rises from the reef 66 feet high, the summit being near its south-eastern extreme. The island is a mile long in a south-east and north-west direction, 2 cables broad, and thickly wooded.

A mile farther out on the reef are several mangrove trees, which when seen clear of the land, closely resemble dark flat rocks.

Water.—Myonji island is much used by fishermen, who obtain their drinking water from wells some distance inside Rás Ulu.

Anchorage.—When inside the outer reefs, anchoring ground commences with depths from 5 to 12 fathoms, the bottom, as a rule, being sand over coral.

The anchorage depends in a great measure on the monsoon; the prevailing strong winds being from N.E. and S.E.; vessels generally find excellent shelter under the lee of the reef, but the following anchorages are pointed out as likely to prove useful:—

Off the west side of Fungu Nameguo, in 7¼ fathoms water, sand and coral, with Myonji summit bearing N.W. ¾ N.; and the left extreme of Tambuzi N.N.E. If approaching the anchorage by Tambuzi pass, care must be taken to avoid the 2-fathom shoal, extending from the north-west end of Fungu Nameguo.

In 6¾ fathoms, sand and coral, with Kero Nyuni (just seen over the sand of Mwamba Wanuni) S. by W. ¼ W. and Seli-Seli rocks S.W. ¾ W.

As there is no trade on this part of the coast, nothing is gained by approaching the shore by the passages between the inner reef; if obliged by necessity to do so, the most favourable time is at low water with the sun astern of the vessel; the lead should be kept constantly going.

Tides.—The tides inside the outer reefs are irregular; the flood is stronger than the ebb, and generally enters by the various openings between the reefs.

TAMBUZI or MINHOUJE PASS, between the reefs of Tambuzi island and Fungu Nameguo is 3 miles wide, but with a danger (Bower shoal) in the fairway.

Bower Shoal consists of patches of coral, the shoalest water, 9 feet at low-water springs, being near its eastern edge. Taking the depth of 5 fathoms as a limit, the shoal is a mile long in an E. by N. and W. by S. direction, and half a mile broad.

To avoid this shoal, do not bring Myonji summit, page 237, between the bearings of W. ½ N. and W. by N. ¾ N.

TAMBUZI or NAMEUGO ISLAND is 1½ miles in length, east and west, and a quarter of a mile in breadth; it may be easily distinguished by being higher than the surrounding islands, and by groups of tall fir trees near its eastern and western ends. The reef on which this island stands extends for 2 miles on all sides, with the exception of the western.

Anchorage.—There is good anchorage three-quarters of a mile west of the western end of Tambuzi, in 9 fathoms, dark sand and coral, with Myonji summit bearing S.W. by W. ½ W. and south extreme of Tambuzi island S.E. by E. ½ E.

Water.—Fresh water cannot be obtained from any of the islands between Rás Pekawi and cape Delgado; and it is for this reason that the islands remain uninhabited.

Masasari rock is small, 3 feet high, with a sand cay which uncovers at a quarter ebb, a cable distant to the north-west.

MSHANGA ISLAND, 54 feet high, is of coral, wooded, and has a reef extending a mile to the eastward and southward.

MYONJI PASS, between Mshanga reef and Myonji reef, is 1¾ miles wide, but is narrowed to one mile by the rocks and shoal water extending northward from the reefs surrounding Myonji and Rás Ula; it is the only ship channel to Mazimbwa bay, and carries from 13 to 30 fathoms water.

MAZIMBWA BAY.—To proceed to Mazimbwa bay, pass to the southward of Masasari rock (3 feet high) at a half to three-quarters of a mile distant, and bring it to bear E. by S. ½ S., this bearing on astern and steering W. by N. ½ N., will lead in mid-channel; when Myonji summit bears S. by E. ½ E. or the western extreme of Mshanga N.E. ¼ E., then steer N.W. ¼ N. until Rás Niguro, the north point of entrance of Mazimbwa river bears W.N.W., when it can be steered for on that bearing, anchoring as convenient in Mazimbwa bay in from 5 to 9 fathoms, mud and sand.

The southern shore of Mazimbwa bay is covered with mangroves, backed by a wooded range 200 feet high. When inside Lupululu island both banks become bolder, with high cliffs. Rás Niguro is a bold cliffy point, the highest on this part of the coast; the cliffs continue along the northern shore of the bay for 2 miles, thence the coast to Rás Msangi is low and sandy, occasionally fringed with mangroves.

Mud flats extend a mile from the south shore of Mazimbwa bay, changing to sand and coral inside Lupululu island.

Mwamba Msaro.—A mile outside these mud flats on the south side of the bay is Mwamba Msaro, a narrow coral reef 2 miles long, extending parallel to the shore, with shoal water between it and the shore reef. It dries only at low-water springs.

Care must be taken when entering Mazimbwa bay to avoid the shallow spits that extend from both extremes of Mwamba Msaro to the north-east.

Mwamba Kisocha may be considered the real northern limit of Mazimbwa bay; this extensive reef projects 2¾ miles from the mainland, with several detached pieces of coral to the southward, with shoal water reaching 3¾ miles from the shore.

Rás Niguro bearing W. by N. ½ N. leads clear of the southern limit of the shoal water; and Rás Msangi tall trees bearing N.N.E. leads eastward of it.

MAZIMBWA RIVER.—In the north-west part of Mazimbwa bay is a creek with numerous bends, that runs N.W. for 4 miles and is then lost in a mangrove swamp. Boats can only ascend it on a rising tide, extensive mud and sand banks narrow the channels to a few yards in width.

Port Mazimbwa has a general depth of 1½ fathoms inside Lupululu island. Holes of 6 and 3 fathoms exist, but are surrounded by shallow water. The narrow and circuitous passage with 1½ fathoms water south-west of Lupululu island, leads from Mazimbwa bay to the port of the same name.

Lupululu island is low and sandy, covered with large baobab trees; patches of large black rocks extend from its eastern end, leaving a very narrow but deep boat channel close to Rás Niguro.

Mazimbwa.—The town of this name on the north side of the port, has a population of about 400; it is under Portuguese jurisdiction. The fort is a ruin overgrown with weeds and not distinguishable from seaward.

On the western side is Mtamba village consisting of 90 huts.

Supplies.—Fowls, goats, sweet potatoes, cassava, and sweet lemons can be obtained by giving two days notice. Water may be obtained from a well in Mtamba village; it has a pleasant taste, but is of a milky-white colour.

Several Banians reside at Mazimbwa, exporting india-rubber in a raw state, and importing American cloth, arms, &c. A dhow runs monthly to Wibo (Ibo).

Anchorage.—When inside Myonji pass, a vessel can always anchor the depths varying from 4 to 10 fathoms with a muddy bottom. A good berth is in 8 fathoms, mud, with Rás Niguro bearing W. by N. ¾ N., and Rás Ulu S.S.E.; a small vessel may proceed nearer the shore and anchor in 4½ fathoms, mud, with Rás Niguro N.W. by W. ¼ W., south extreme of Mshanga E.S.E., and Lupululu island W. ¾ N.

Tides.—The flood sets to the westward, and the ebb to the eastward; the flood is scarcely felt, but the ebb runs at the rate of from 2 to 3 knots at springs.

SUNA PASS, between the reef off Tambuzi island and Mwamba Tambula, is 2¼ miles wide and perfectly clear; the shoalest water is 5¼ fathoms nearly mid-channel in the western part of the pass.

SUNA ISLAND is small and of coral formation, with its summit crowned with trees 58 feet above the sea; it is clean on its western side, but a reef extends about a mile in an E. by N. and southerly direction.

Luwinza Rock, 6 feet above high water, and about 2½ miles to the south-west of Suna island, bears a strong resemblance to the black hull of an unmasted ship.

Congo island is small and circular, 35 feet high, having, in 1875, a tall dead baobab tree in its centre. The surrounding reef extends 1½ miles to the south-east of the island, and on it are several boulders, uncovering at a quarter ebb; they must not be mistaken for a round coral islet 5 feet above high water 2 miles S.W. ½ S. from Congo island. Shoal water and patches of coral also extend 2¼ miles in a north-easterly, northerly, and westerly direction from the island.

Mwamba Kisanga Mungu embraces the whole of the numerous coral patches and rocks lying between Mshanga and Congo islands in one direction, and Suna island and the round coral islet in the other. It consists of extensive coral reefs, with several sand cays on them, and detached rocks, with one and 2 fathoms water between them. These coral patches, rocks, and shallow water extend north and south over a space of about 10 miles.

A channel 3 cables wide lies between the eastern edge of the reef and Suna island; another narrow channel with 1½ fathoms water, exists between Luwinza reef and the shoal north of it, fit only for dhows and boats.

NYUNI or LUHAMBA PASS, between Mwamba Tambula and the reefs extending southward from Kifuki and Mtundo islands, is 3½ miles wide at the entrance, but is narrowed to three-quarters of a mile by the Gray patches, and a shoal with 3 fathoms water, off the south shore of Kifuki island.

MWAMBA TAMBULA.—From Nyuni island, at the north-west end of Mwamba Tambula, this latter reef extends 4 miles to the eastward and 2 miles to the S.S.E. with sand cays, and boulders. It is steep-to on the northern and eastern faces, and the heavy surf plainly marks the edge of the reef.

Nyuni Island, 17 feet high, is small and flat, and covered with short grass.

Gray Patches extend 2½ miles N. by W. ½ W. from Nyuni island; they consist of one 16 feet and several 18 feet patches, with 4 and 5 fathoms water between them. To clear the patches steer for Nyuni island on a S.W. by W. ¾ W. bearing, until a square black clump of trees on Rás Msangi (probably the only portion of the main land visible) bears N.W. by W. ½ W., when the trees can be steered for, this course will lead a vessel in mid-channel with not less than 10 fathoms.

RÁS MSANGI, the northern extreme of Mazimbwa bay, is a well marked point 47 feet high; it may be recognised by a square black clump of tall fir trees 94 feet high on its northern side, and is the most conspicuous object on this part of the mainland.

The coast reef extends 1½ miles eastward of Rás Msangi, and shallow water borders the point at a distance of 2¾ miles, and thence the coast to the south-westward to Mwamba Kisocha, page 239.

Channel.—A 3-fathom channel exists southward between the shallow ground extending from the shore of Rás Msangi, and the shallow ground to the north and west of Congo island, but it is so circuitous and narrow, with no leading marks, that it is impracticable for ships.

Dangers.—The bank, extending N.E. ½ E. 2½ miles from Congo island, has 1¾ fathoms on it; another in mid-channel with 1½ fathoms, with Msangi high clump bearing N.N.W. ⅞ W., and the western extreme of Kifuki island N.E. ¼ E.; and a third with 2½ fathoms, also in mid-channel, with Msangi high clump N. ⅝ W., and western extreme of Kifuki island N.E. by E. ½ E.

Jeffreys Rock, a pinnacle having less than 6 feet water on it, with 4 to 6 fathoms round it, is the southern danger in this channel; from it Msangi high clump bears N.E. ¾ N. and centre of Congo island S.E. ⅞ E.

KIFUKI (Mistunso) and MTUNDO (Numba) ISLANDS are on one reef, and being almost joined together, may be considered as one island. On the reef, at the north-east end of Mtundo island, is Sandcay islet, 23 feet high; and half a mile to the northward of Sandcay is Makunga islet, 8 feet high; the latter is not easily recognised.

Both Kifuki and Mtundo are about 80 feet high and thickly wooded; when made from the south-eastward the various elevations appear as detached hills, the highest on Kifuki being a cone-shaped clump of trees.

A reef skirts the south coast of Kifuki and Mtundo at the distance of half a mile: at the south-east extreme of Mtundo the reef becomes more extensive and curves round to the southward and westward at the distance of 1¼ and 1¾ miles from the shore, leaving a lane of water one and 2 fathoms deep between the outer and inner portion of the reef.

The reef on the eastern side of Mtundo extends about half a mile from the shore; it is steep-to, and trends to the northward 1½ miles beyond the north extreme of Mtundo.

The shoal with 3 fathoms water on it, off the south point of Kifuki, forms the north limit of Nyuni pass.

Kifuki Pass, between Rás Msangi and Kifuki island, is clear, but a shoal of 4¼ fathoms, lies in mid-channel; the western point of Kifuki may be rounded at a distance of 4 cables; but the shallow ground with a depth of 1¾ fathoms on it, extends 2 miles eastward of Rás Msangi. The shoal of 4¼ fathoms composed of sand and coral is circular, 3 cables broad, and its centre bears W. ¾ N. 1½ miles from the western point of Kifuki.

As a general rule it will be found that the western shores of these off-lying islands are steep-to, the reef extending from the eastern extreme to seaward. It will be seen, by referring to the chart, that this rule holds good for the following: Kifuki, Nyuni, Suna, Tambuzi, Mshanga, Kero Nyuni, and Kisanga islands; and in a lesser degree to Wamizi, Vumba, and Kisingura islands. The seaman, however, should everywhere navigate amongst these islands and reefs with the greatest caution.

Anchorage.—Good anchorage will be found in 5 and 6 fathoms, sand and coral, three-quarters of a mile north or south of the west point of Kifuki, according to the monsoon.

Tides.—It is high water in Kifuki pass, full and change, at 4h. 10m.; springs rise 14 feet; and neaps 9 feet. At the anchorage the flood sets N.W., and the ebb N.E. running at springs from 2 to 3 knots, but scarcely perceptible at neaps.

MTUNDO or NUMBA PASS is the opening between the reefs of Mtundo and Wamizi islands; there is a deep and clear channel 3½ miles wide between Fungu Makunga and the coast reef of Wamizi, which extends 1½ miles south-east, and one mile south of this latter island. The only ship channel to the inner anchorage is the one north of Penguin shoal.

Fungu Makunga are detached shoals of 2¾ and 3 fathoms on a bank, the 5-fathom limit of which is N.E. ½ E. $3\frac{7}{10}$ miles from the north-east point of Mtundo. A swell is generally found in Mtundo pass, causing the sea to break heavily on these patches at low water.

If entering the pass from the southward do not bring the eastern extreme of Wamizi to bear westward of North, until Vumba island bears W. by S.; the latter will show as two small distinct black lumps.

Appearance of Land.—Wamizi island is the highest of the islands in this district, and may be known by the large number of wooded eminences making as detached hillocks from seaward; on a nearer approach the reef will be seen breaking heavily with a white sandy beach at the back. The wooded islet Mkunga, 30 feet high, and a sand cay are on the reef off the northern extreme of Wamizi.

The mainland is not visible outside these islands.

Channel.—There is no ship channel to the southward of Penguin shoal; depths of 4 to 6 fathoms exist between the various reefs, but the water shoals to 3¾ fathoms between Vumba and Kisingura islands with numerous 2½ and 3-fathom patches.

Mwamba Mtundo are coral and sand patches, drying at three-quarters ebb, 2 miles north of the north-west point of Mtundo; detached patches of coral with deep water between, connect it with Mtundo island fringe reef.

Gulnare Reef.—A mile to the west-north-west of Mwamba Mtundo is Gulnare reef, with 4 to 6 fathoms water around it. Small craft should not use this channel except at low water, when the reefs show plainly; the eye and lead are the best guides. The centre of Kisingura island bearing S.W. by W. ½ W. leads midway between the reefs.

Penguin Shoal, a mile to the northward of Gulnare reef, is 1½ miles in extent, taking the 3-fathom line as a limit. The shoalest water on it is 6 feet.

Vumba and Kisingura Islands are both wooded, the former being 64 and the latter 44 feet high. There is a 3½-fathoms channel between them, but it has a shoal patch of 2½ fathoms in the centre.

At 1½ miles N.E. by E. from Vumba island is a remarkable mushroom-shaped coral islet 4 feet above high water, standing in the centre of a coral and sand flat. The coral flat is 1$\frac{4}{10}$ miles long in a N.E. and S.W. direction, and a half a mile broad. There is a 3-fathom channel between it and Vumba; and a 5-fathom channel between Penguin shoal to the north-east and Gulnare reef.

A small vessel might use the passage formed by Penguin shoal and the coral islet to the westward, and Gulnare reef to the eastward, but it is not recommended, and as mentioned before, low water is the best time for navigating these channels.

Channel.—The channel north of Penguin shoal is 8 cables wide, with depths of 8 to 15 fathoms; it is narrowed by a spit with 2¾ fathoms on it, extending 1$\frac{4}{10}$ miles from the south extreme of Wamizi.

After passing Fungu Makungu bring Rás Nondo to bear N.W. ¾ W., and steer for it until the west extreme of Vumba bears S.W. ½ S., when a course can be steered to the southward.

The passage west of Vumba is only 3 cables wide, with a depth of 4 fathoms, and only practicable for handy vessels of light draught.

Anchorage.—Good anchorage may be obtained in 7 fathoms, sand, with Rás Nondo bearing N.W. by N., and the west extreme of Vumba S.W.

COAST.—Rás Nondo is about 10¼ miles N.N.E. ¾ E. of Rás Msangi; the shore immediately north of Rás Msangi forms a bay about 2 miles deep, and sand flats, dry at low water, extend all along shore to the northward at a distance of 2 miles, rendering landing impracticable except at high water; these sand-flats are again bordered by shallow water which reach 3¾ miles from the shore. The land is low and wooded, and there are villages consisting of a few huts on the coast, from the inhabitants of which a few fowls may be obtained; these villages will be found in the cocoa-nut groves.

RÁS NONDO may be easily recognised from the southward by a group of tall fir trees. A sand bank extends nearly 2 miles to the north-east of this point, leaving a passage between it and the west end of Wamizi island suitable only for boats, the approach on the northern side being barred at low water by sand-patches with two or three feet between them.

WAMIZI or AMIZI ISLAND is nearly 8 miles long east and west, and rather less than a mile broad; it is low—being 63 feet high at its west end, and 92 feet high at its east end—and wooded, several of the high clumps of trees bear a certain resemblance to hills when at a distance. There is a conspicuous spreading tree on its western point.

The Portuguese formerly had an establishment here, but the scarcity of water caused its removal to Mluri.

Reef.—At the northern point of the island, a coral spit trends off and round westward, under the lee of which a boat will find good shelter at low water. Although the coast reef is close to the northern shore, foul ground extends some distance off it; therefore vessels should not approach the northern shore within 1½ miles.

WAMIZI PASS.—The opening between the reefs of Rongwi and Wamizi islands is 5½ miles across, and between the reefs of Keramimbi and Wamizi 3¾ miles. The passage is deep and clear, with the exception of Mwamba Mpanga-panga.

Mwamba Mpanga-panga.—The south end of this danger lies about 2¼ miles to the N.E. of the west extreme of Wamizi; the reef is more than 1¼ miles north and south, by one mile broad, and composed of sand and coral, with 2 feet water on it, steep-to on all sides, and the sea breaks at half tide; it is however, difficult to recognise except at low water.

Keramimbi island, 40 feet high, on the northern side of Wamizi pass, is nearly a mile long, north and south, by half a mile broad, and thickly wooded. Shoal water and coral patches surround this island at a distance of 1½ miles to the southward and eastward, the latter dry at low water; the whole space within the island between Rás Afuni and the shore 5½ miles to the south-west is shallow ground.

The passage between Keramimbi and Rongwi has a depth of 6 feet only in mid-channel.

Pollard Shoal, half a mile long north and south, and one third of a mile broad, with 1½ fathoms water, lies about S. by E. ½ E. 2¾ miles nearly from the east extreme of Rongwi island, and is steep-to.

Directions.—When entering Wamizi pass, borrow a little on Wamizi island, taking care not to close it within 2 miles, until Mkunga islet off the north end of Wamizi bears S.E. ¾ E.; it will then show as an extreme, and if kept on this bearing astern, will lead to an anchorage in 9 fathoms, sand and coral, with the east point of Keramimbi bearing N.N.E. ½ E.

MAIYAPA BAY.—The shores of this bay, between Rás Nondo and Rás Afunji, which are 12 miles apart, are bordered all round with extensive sand banks and shallow ground, which with Mwamba, Mpanga-panga, Keramimbi, and its surrounding reefs, together with numerous deep holes of 30 and 20 fathoms, limit any anchoring ground to a comparative small area.

Vessels proceeding to Maiyapa bay, may use the channel either north or south of Mwamba Mpanga-panga, but the northern is recommended on account of the more gradual shoaling of the water.

To enter by the north channel, follow the directions laid down for Wamizi pass, but instead of anchoring as above directed, steer W.S.W. for the south-eastern of three remarkable firs, until Wamizi single tree bears S. ½ E., then altering course to N. by W. ¾ W., and anchor as convenient in from 6 to 10 fathoms, sand and coral.

The south channel between Mwamba Mpanga-panga and that of Wamizi is three-quarters of a mile wide, the shoals on both sides being steep-to. To proceed through this channel, borrow a little on Wamizi island until the single tree on its western end bears W.S.W.; steer for it on that bearing until a conspicuous rise (the second clump of trees 80 feet high, 1¾ miles from the eastern extreme of Wamizi) bears S.E. by E. ¾ E., with this bearing on astern steer N.W. by W. ¾ W. until Wamizi single tree bears S. by W. ½ W. (from this position Vumba island, south of Wamizi, should be shut in), thence a N. by W. ¾ W. course will lead to an anchorage in the northern portion of Maiyapa bay.

Anchorage.—The holding ground in Maiyapa bay off the passage leading to port Mluri is composed of mud, but in other parts sand and coral. Good anchorage, but rather exposed to the ocean swell, may be found in 7½ fathoms, with Wamizi single tree bearing S. ½ E.; east extreme of Wamizi S.E. ¾ E.; and Keramimbi south point E. ¼ S.

H.M.S. *Nassau* rode out a strong south-easterly gale in smooth water, 5 cables south-west of Mwamba Mpanga-panga in 6 fathoms, sand and coral, with Wamizi single tree bearing S. by W. ½ W. distant 2 miles; it would be equally well sheltered during the north-easterly monsoon, as the ocean swell is not experienced here.

Tides.—In Maiyapa bay, the flood sets to the S.W., ebb to the S.E., at the rate of 4 to 2 knots at springs.

Port Mluri.—A tongue of sand, drying at half ebb, projecting northward from the southern shore of Maiyapa bay, leaves between it and the shore a channel to the port of Mluri. The entrance, except for vessels of light draught, is round the shallow ground about 4½ miles north of the port, and is narrow and tortuous, with a 9-feet shoal in mid-channel; when inside, the anchoring ground is confined, with depths of 7 to 10 fathoms, black adhesive mud. The harbour is useless for anything but small vessels. A vessel might ground for a tide on the inner side of the eastern bank, if required.

COAST.—Rás Afunji is 12 miles N.N.E. ¼ E. from Rás Nondo; the western part of the shore near point Mluri is mangrove, but the north and south portions are sand. The only prominent features in Maiyapa bay are three tall fir trees, the centre and largest is 2½ miles north-west of Rás Nondo. In the south-west part of the bay at, respectively, 4 and 5 miles north-west of Rás Nondo are the rivers Mluri and Maiyapa, hitherto supposed to be fresh, but they are found to be salt-water creeks. The only village in the bay is that of Marongo, consisting of 70 huts; a few fowls, goats, and sweet potatoes may be obtained.* A range of wooded hills, 200 feet high, extends from about Rás Niguro northward to cape Delgado. On the north part of the coast are several villages built in cocoa-nut groves.

RÁS AFUNJI, 15 feet high, the southern point of Tunghi bay, is bold and sandy, with banks projecting a mile from it. The channel between the point and the reef off Rongwi island, is a mile wide at low water, but so obstructed by coral reefs and shoals as to render it nearly unnavigable.

Dhows trading to Kiouya, however, frequently pass through at high-water springs. There are several 3-fathom holes in this passage.

RONGWI and TEKOMAJI ISLANDS may be considered as standing on one continuous coral reef, upwards of 9 miles long in a north and south direction, the seaward face of which is steep-to, together with Pollard shoal already described. The reef skirts the shore generally at a distance of a mile, and on the south-east part, where it extends farther off, there are several detached black rocks uncovering at half ebb. A narrow channel having 8 feet water divides Rongwi from Tekomaji reefs, but with any swell the sea breaks across the entrance.

Rongwi island is 2 miles from Rás Afunji, and 1½ miles from Tekomaji; off its north-west point is the well-wooded islet of Kamesi, 40 feet high, and which shows distinctly from the anchorage off Tekomaji. Tekomaji island is of a triangular shape, 2 miles long north and south, and as its name implies, there is no water on this island.

When approaching these islands from seaward, the only distinguishing features are two rounded lumps of trees 94 feet high on the eastern part of Rongwi, and when within 6 miles, three fir trees on the eastern shore of Tekomaji will be seen; if in the parallel of Rongwi the latter will show as an extreme; there is a remarkable single fir tree, resembling a mast, on the north-western point of Tekomaji. Both islands are low and flat, but densely wooded, the outer coast of Tekomaji is rocky, but that of Rongwi is principally sandy beach with a few parts rocky.

TUNGHI or TOUGHY PASS.—The channel between the reefs of cape Delgado and Tekomaji is 2½ miles wide, and is the only ship channel into Tunghi bay. The reef extends 1½ miles off the northern and north-eastern ends of Tekomaji, and is steep-to with no off-lying patches; the reef off cape Delgado projects a mile to the south-east, and is similar in character to Tekomaji reef; a heavy surf marks the edges of these dangers.

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* Marongo is the most northern point of territory acknowledging Portuguese jurisdiction.

TUNGHI BAY, formed by cape Delgado on the north and Rás Afunji on the south, is semi-circular, having a sandy beach around its shores with the exception of the portion between Kiouya or Tunghi village and cape Delgado, which is rocky. The land between cape Delgado and Mto Mnangani is from 80 to 200 feet high, thence to Ràs Afunji it is low and flat. On the wooded ridge, west of Mto Mnangani is a single baobab tree, also a compact group, 250 and 228 feet high respectively, the former is the highest ground in the vicinity of cape Delgado. There is also a conspicuous single palm tree 75 feet high, half a mile from cape Delgado, which shows distinctly all over Tunghi bay.

From Rasi Afunji round the head of the bay to Kiouya village are sand-flats stretching a mile from the shore, their seaward edges are composed of coral, and shallow water extends a considerable distance beyond.

Directions.—When entering Tunghi pass, if in the morning, the single palm near cape Delgado, and the baobab trees mentioned above, will be seen ; if the vessel be approaching from the northward, the single fir on the north-western point of Tekomaji will show as an extreme; during the afternoon the main land is covered with haze, and a stranger would experience great difficulty in recognising these points, but the extremes of Tekomaji and cape Delgado will be visible.

To proceed through the pass keep midway between the reefs, but if blowing hard from the south-east it is advisable to borrow on Tekomaji reef, to get under its lee. The group of baobab trees bearing W. ½ N. leads in mid-channel ; soundings will not be obtained with the hand lead until Rás Afunji is well open of Tekomaji. The channel leading to the anchorage in the western part of Tunghi bay is only 5 cables wide between the 5-fathom lines of soundings, but has a depth of 14 to 8 fathoms. To proceed through, keep the group of baobab trees as mentioned before, W. ½ N. until Rás Afunji bears S. ¼ W., then steer S.W. by W. ¼ W. until Tekomaji tree bears E.S.E., or group of baobab trees W. by N. ½ N., when if the latter is steered for it will lead to an anchorage, which must be chosen with caution.

Anchorage.—The extensive shoals which front the northern shore of Tunghi bay, and those to the southward connecting Mto Mnangani with Tekomaji, limits the anchoring ground for large ships. The best anchorage is in 9 fathoms, mud, with Rás Afunji bearing S.S.E. ½ E., the extreme of cape Delgado E.N.E., and the group of baobab trees W. by N. ; the bay is exposed to the ocean swell.

For a passing vessel the best anchorage in either monsoon, sheltered from the swell, is westward of the north-west point of Tekomaji.

H.M.S. *Nassau* rode out several gales from N.E. and S.E. in 4¾ fathoms, sand and coral, with the single fir tree on Tekomaji bearing S.E. ½ S. distant one mile; this would be too near the reef for a large vessel, a better position would be 7½ fathoms, with the single fir tree on Tekomaji S.E. by E. ½ E. 1⅒ miles, and Rás Afunji S. ½ W., 3¾ miles.

Tides.—It is high water at the anchorage in Tunghi bay, full and change, at 4h. 5m.; springs rise 14 feet and neaps 9 feet: the flood runs S.S.W. and ebb N. by E. one to 2 knots an hour.

Mto Mnangani in the western part of Tunghi bay, is 3 cables wide at the entrance, but banks which dry at low water, narrow it to less than a cable; canoes can only ascend 1½ miles from the mouth. The village of the same name is on the western bank of the river, it consists of a few well-built huts. Fowls and excellent fish can be obtained.

Kiouya Village, also called Tunghi, is concealed from view by a belt of thick mangrove bushes which front the shore, but the position of the village may be readily identified by an unusually thick and tall grove of cocoa-nut trees.* The old fort is a small square building in a dilapidated state with three guns, probably 6-pounders, only one of which is mounted and occasionally fired. The natives were civil, although many of them were armed with knives and spears; but they have a bad name with former cruisers.

Dhows trading to this place anchor off the village until high water, when they proceed into narrow lanes cut in the mangroves; with their mast down they are completely hidden from view of a boat passing immediately outside.

Supplies.—A few fowls were obtained here in exchange for calico, money was also taken, but the best articles for barter are between powder, calico, tobacco, and beads.

Firewood may be cut on any part of the coast between Rás Pekawi and cape Delgado; it is generally ill adapted for steaming purposes, but by a careful selection of trees, many of them might advantageously be used with coal.

Disease.—Small-pox of a virulent character existed in October 1875 amongst the villagers north of Rás Pekawi, communication between many of the villages had been broken off to stop the contagion; the disease had been imported from Madagascar. The fever months were coincident with the rainy ones, viz., February to May.

Winds.—From information received from the natives and old residents at Zanzibar, the time of the change of the monsoon as well as its strength is rarely the same for two consecutive years; but the general experience gained in H.M.S. *Nassau*, whilst surveying the coast was as follows; north-easterly winds from December to March, getting lighter as the season progresses, varied occasionally by heavy squalls of wind and rain from N.W., accompanied by vivid lightnings and heavy thunder.

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* Kiouya is the southern limit of the Sultan of Zanzibar's dominions, the chief being an Arab appointed by His Highness.

The change of monsoons occurs in April, heavy squalls then frequently blow from South and S.W. By the beginning of May the steady south-east monsoon has set in, generally freshening in the afternoon to a strong breeze; from this month the force gradually lessens, and the wind veers to the eastward; by October very light easterly winds prevail, the change to N.E. taking place in the early part of November in a gradual manner with a few light showers.

Between the islands and the main, land and sea breezes prevail, the latter during the months of May and June blow very fresh.

CURRENT.—As previously stated at page 2, the separation of the equatorial current appears generally to take place about the parallel of 11° 0′ S., or near cape Delgado.*

There are, however, exceptions:—H.M.S. *Diamond* in January 1877, from Mafia island to cape Delgado, experienced the usual northerly current about 2 miles an hour until within 40 miles of the cape, when the current was found setting to the southward at the same rate. The *Diamond* hove to at 10h. p.m. 20 miles north of the cape, and at 6h. a.m. the vessel was abreast it.

Slave trade.—The slave trade, except that carried on by canoes, may be considered virtually extinct between cape Delgado and Rás Pekawi; the only village holding communication with the interior is that of Mazimbwa, 1878.

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* *See* pp. 2 and 165.

CHAPTER VIII.

CAPE DELGADO TO ZANZIBAR.

VARIATION in 1878.

Cape Delgado	11° 55′ W.	Mafia, Moresby point	10° 55′ W.
Port Kilwa	11° 30′ W.	Zanzibar harbour	10° 30′ W.

CAPE DELGADO, known by the natives as Rás Kongo, is low, covered with trees, and not easily distinguished from the other low land and islands when coming from the southward, but from the northward it makes like an island. A palm tree, 75 feet high, stands on the south side of the cape half a mile from its extremity. The coral reef extends 1¼ miles S.E. by S. from the small off-lying rock near the extreme of the cape; on the east side of the cape, and on the north and west, the reef extends from one half to three-quarters of a mile from the shore, and dries at half tide.*

The long ocean swell generally breaks heavily on the reef, which is visible some distance off.†

Tides.—It is high water, full and change, at cape Delgado, at 4h. 10m. Springs rise 12 feet.

COAST.—Cape Rovuma or Rás Swafo is about 14 miles N. by W. ¼ W. of cape Delgado; the coast between is low, thickly wooded, and forms the two bays of Mbwezi and Keonga, which are separated by Rás Nasunga. The shore is all along skirted by extensive reefs and shallow water.

MBWEZI BAY, between cape Delgado and Rás Nasunga (Masonga point), is about 5¼ miles across, and forms a bight 2¼ miles deep, with a long white sandy beach in its north-western part. There is, however, no anchorage in this bay, the reefs which skirt the coast being steep-to, and having no creeks, it is seldom practicable for even a boat to land.

Mbwezi Village stands at the head of the bay, near the south end of the sandy beach, in a grove of cocoa-nut trees; on the coast to the eastward of it are the white ruins of a tomb.

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* The information relating to the coast between cape Delgado and Mto Porwe is by Lieutenant Francis J. Gray, R.N., commanding H.M. surveying vessel *Nassau*, 1874.

† *See* Admiralty charts:—Cape Delgado to Kilwa, No. 1,808, scale of *m* = 0·2 inch; and cape Delgado to Mikindani bay, with views, No. 690, scale, *m* = 1·0 inch.

RÁS NASUNGA (Masonga point), the northern point of Mbwezi bay, is low, and may be easily recognised by the number of detached rocks off it. A dangerous reef, with rocks and boulders on its outer edge, extends in a S.E. by E. direction $1\frac{6}{10}$ miles from the point. The sea, which generally breaks on the edge of the reef, was probably mistaken for a supposed detached reef named Manbaquitana, referred to in an old memoir; but constantly while at anchor near it in the *Nassau*, the sea was observed breaking heavily on the outer edge, while inside it the water was comparatively smooth. The outer edge of the reef trends to the south-west round the shore of Mbwezi bay, diminishing to about three-quarters of a mile in breadth near the village of Mbwezi, and thence round cape Delgado.

KEONGA BAY (Hambezi), which is 4 miles across between Rás Nasunga and Rás Samadudu, is shallow at its head, where there are a number of sand banks that dry at low water spring tides.

From Rás Nasunga the coast trends to the N.W. for 3½ miles to a rocky ledge, 3½ cables off the shore, where it turns W.S.W., and forms the south-eastern shore of the Mto Keonga. A small sand bank that dries at low water, and on which the sea nearly always breaks, lies N.W. ¼ N. 3¼ miles from Rás Nasunga; and between this bank and the reef off Rás Nasunga, inside the 5-fathom line, the bottom is foul, numerous heads of coral and boulders uncovering at low water spring tides. The dangers are upwards of three-quarters of a mile from the shore.

Mto Keonga and Mto Mpambi are arms of the sea; the water from Mto Mpambi is reported to join Mto Decomba to the north-west at spring tides, and then it is only available for shallow canoes.

Keonga, a native village about 2 miles up the creek of that name on the south side, stands in a grove of cocoa-nut trees, on a small ridge 70 feet high, and is the resort of many of the dhows trading on the coast. It contains about 1,000 huts and has an estimated population of 3,000; the entire place and people belong to an Arab named Masudi bin Mahommed bin Said. The people are very poor and no stock is to be procured, but good water for cruisers' boats may be obtained at a well in the creek under the village; in which creek the dhows usually lay screened from observation.

The channel leading to Keonga, being shallow, narrow, and tortuous, is totally useless for a ship, and boats should only ascend it with a rising tide.

Anchorage.—There is no good anchorage in Keonga bay, the edge of the banks being steep-to and rocky, but H.M.S. *Nassau* remained at anchor for some days on the south side in 7 fathoms, coral and sand, with the following bearings: extreme north point, N. by W. ¼ W.; Mto Keonga south point, in line with Kilima Mundo (page 257), W. by N. ¾ N.;

and Rás Nasunga (end of trees), S. ½ E. But a better anchorage would be in 7½ fathoms, sand, with the extreme north point seen, bearing N.N.W.; Mto Keonga south point, W. by N. ½ N.; and extreme of Rás Nasunga, S.S.W. ¾ W.

Directions.—Intending to anchor in Keonga bay, steer in with Kilima Mundo, a peak with large and scattered trees on it, in line with a clump of tall trees north of Mto Letonda, bearing W. by N. ½ N., until the extreme of Rás Nasunga bears S.S.W. ¾ W., when that point should be steered for until in 10 fathoms water, when the anchor should be immediately let go. Kilima Mundo should be always kept well open northward of the south point of entrance of Mto Keonga.

Mwamba Ricoma is an extensive reef which runs off south and east of Hasherati rocks, and bounds the northern side of Keonga bay. The south part of this reef, which dries at low water, lies nearly 1½ miles S.S.W. from the highest Hasherati rock, and its eastern extreme bears E. ¾ N., the same distance from Hasherati rock. From this eastern extreme the reef follows the coast of Swafo, which is low and thickly wooded, about N. ¾ W., and nearly the same distance off shore, until north-east of Rás Swafo, when it gradually closes the coast to a distance of 8 cables. The outer edge of this reef is composed of rock and coral, but inside it is white sand over coral.

RÁS SWAFO (Cape Rovúma), the south-east point of Rovúma bay is low and thickly wooded, with a small conical hill, 77 feet high, a quarter of a mile from the coast; this hill is conspicuous north or south of it when near the land.

Mwamba Swafo is an extensive bank of coral and sand, with one and 2 fathoms water on its outer edge, at the distance of 1½ miles to the northward and eastward of Rás Swafo. To the northward of Rás Swafo it dries in patches at low water springs, nearly three-quarters of a mile from the shore, and to the eastward for 1½ miles. The edge of this bank is steep-to and the tides are strong, so that as the lead would give but little warning, a vessel should not on any account close the land within 2½ miles.

ROVÚMA BAY is contained between Rás Swafo on the south and Rás Matunda on the north, the distance between the two points being about 9 miles, and the depth of the bay to the river entrance about 4 miles. From Rás Swafo the coast trends W. by N. ¾ N. 5 miles nearly to Rás Rovúma, the south-east point of the Rovúma river, and from Rás Mwambo, the north-west point of the river, the general direction is N. by E. ½ E. to Rás Matunda. The two points of the river are about three-quarters of a mile apart.

Mto Decomba is a creek three-quarters of a mile westward of Rás Swafo, with a bar at the entrance on which the sea generally breaks heavily, but it is at times possible for a boat to get in at half flood. Inside, 2 to 3 fathoms water, can be carried for a mile to the south-westward. This creek is reported to be navigable for canoes to Keonga bay.

To the westward of Mto Decomba, a long flat sandy beach, on which it is possible to land occasionally, runs N.W. by W. to the entrance of Rovúma river, but between the river entrance and Rás Matunda it is seldom possible to effect a landing, the bay being quite open to the ocean swell, and heavy rollers are at all times breaking.

Mto Mquango is a small creek or inlet east of Rovúma river, into which boats can go at high water springs, but some little distance up it is almost impassable for canoes. The sea generally breaks heavily off the entrance of this creek.

Mto Letokoto, a creek north of Rovúma river, is about three-quarters of a mile wide at the entrance, and is reported to be navigable by canoes for a distance of 15 miles to the Rovúma river, but it is rendered useless for navigable purposes by a reef and sand bank which dry across the mouth, making it impossible to effect an entrance from seaward.

Appearance of Land.—From Rás Swafo to the south point of Mto Letokoto the land is low, covered with mangrove trees, and nearly all swamp at high water spring tides. About 2½ miles north of Rás Mwambo, on the coast, is a conspicuous square clump of trees; and 1½ miles farther north is a group of three remarkable tall trees, which from seaward form one of the most prominent features in Rovúma bay.

ROVÚMA RIVER is at the head of Rovúma bay, and the entrance is 5 miles westward of Rás Swafo. Its width at the mouth between the trees is about 8½ cables, but at low water this is reduced by a sand bank that dries from the west shore to less than 4 cables. From Rás Rovúma the general direction of the river is S.W. by W., but at nearly 1½ miles within the point the channel is obstructed by sand banks, with in places less than one foot at low water springs. This was in September, during the dry season, when the river was very low.

Owing to the great depth of water immediately outside the mouth of the river, there are very dangerous overfalls at the entrance when the wind is blowing from the eastward, which makes it unsafe for a boat to attempt to go in, the sea apparently breaking right across. Mr. D. May, master, R.N., in 1861 writes:—There is no bar, there being deep water right into the mouth of the river. The entrance is nevertheless dangerous for boats between half flood and half ebb, on account of the overfall caused by the sudden change in the depths from 17 to 3 fathoms, and the ebb runs stronger near the mouth of the river than a boat could stem.

Approaching the bay from the southward, the entrance of the river is not easily made out, as it does not show well until bearing S.W. by W., and there are several smaller openings both north and south of it. The muddy water from the river extends beyond the mouth of the bay into deep sea soundings; the clearly defined line where it meets (but does not mix with) the clear blue water is very noticeable.

Inland Navigation.—About 2 miles inside the river's mouth a series of sand banks commence, which obstruct the navigation, rendering it very intricate, the channel being narrow, with a depth of only 5 or 6 feet in places, and here and there running abruptly from one side of the river to the other.* The navigation of the Rovúma depends much upon the season, it being highest in March and lowest in about October. Mr. May ascended the river 30 miles in the *Pioneer* steamer in March; the water subsided in the middle of the month, but rose again nearly to its former height at its end. Mr. May's examination of the river was made between these periods, and at his turning point there appeared to be no impediment to his further progress, but the water beginning to fall rapidly induced him to return to the entrance, in doing which they barely carried 5 feet over the shoal patches. The stream ran 3 knots.*

Dr. Livingstone ascended the river in boats 156 miles in October 1862, and proceeded to lat. 11° 13′ S., long. 38° 39′ E., about 114 miles as the crow flies from the coast. The river was unusually and excessively low, entailing frequent *draggings* of the boats at the shallow parts, particularly when the river split into three channels. The ascent of the river occupied 15 days, and its descent 10 days.† For several months in the year the water stands 3 feet higher than it did at the time of this expedition. Dr. Livingstone affirms that he has no doubt a vessel drawing 18 *inches* when loaded might run with ease during many months of the year.†

The bed of the river is about three-quarters of a mile wide. It is flanked by well wooded table land, apparently ranges of hills 500 feet high; sometimes the spurs of the hills come close to the river, but there is generally a mile of level alluvial soil between the high land and the bank.

About 60 miles up the river the table land recedes, and there is an immense plain with detached granite rocks and hills dotted about it. Here some rocks appear in the river, and at last, at the farthest point reached by the expedition, the bed of the river is all rocky, the water rushing through numerous channels between rocky masses 4 or 5 feet out of water. Canoes go through these channels with ease, and the expedition might have taken their boats up, but they were informed that the channels were much narrower farther up, and that it was likely they would get them smashed coming down.†

Natives.—There are but few people near the mouth of the river, and they are shy and timid, but farther up there are numerous villages, some on sand banks in the river. The natives fired with muskets and bows and arrows at the expedition, taking advantage of their having to pass a narrow passage under a high bank, but upon the fire being returned they desisted.*

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* D. May, Master, R.N., 1861.

† Dr. Livingstone, 1862.

The Tsetse fly is met with all along the Rovúma, and the people in consequence have no cattle.

Supplies.—Only a scanty supply of provisions is to be obtained from the natives. The water of the river affects people at first, but not after being accustomed to it. Wood for steamers may be easily procured.†

Tides.—It is high water at the river's mouth, full and change, at 4h. 0m.; springs rise 16 feet, neaps 11 feet, neaps range 5 feet. When the river is high the current runs out without ceasing, overcoming the flood tide.†

Rás Matunda (Matoonda point), on the north side of Rovúma bay, may be easily recognised by a series of white sand hills, 80 feet high, about a mile in extent, near the coast, with a single tall tree on their eastern extreme, which is very conspicuous from the northward or southward, but when to the eastward, it is with difficulty distinguished from other trees in the background. As the Matunda sand hills are the only ones on the extent of coast between cape Delgado and Zanzibar, they may be of use to the seaman who is in doubt as to his position.

The reef dries nearly a mile east and south-east of Rás Matunda, whence it trends about S.W. ¾ W. to the remarkable trees southward of Mto Letokoto, where the distance from the shore to the edge of the reef decreases to 1½ cables, but with shallow water some distance off.

Tides.—It is high water in Rovúma bay, full and change, at 4h. 10m.; springs rise 12 feet; the ebb running to the northward and flood to the south-eastward.

Anchorages.—There is good anchorage on the south side of Rovúma bay in 7 fathoms, mud, with the following bearings:—Single tree on Rás Matunda, N. by W.; Remarkable trees, N.W. ¾ N.; Kilima Mundo, S.W. by W.; and extreme of Rás Swafo, S.E. ½ S.

This was found the most convenient anchorage, as less swell was experienced than in other parts of the bay. Good anchorage may also be obtained on the north side of the bay in 10 fathoms, mud, with the east extreme of Rás Matunda, N. by E.; Remarkable trees, W. ¾ N.; Kilima Mundo, S.S.W. ¾ W.

There is no anchorage immediately off the river's entrance, as the bank is very steep, and the depth decreases from 90 fathoms to 5 fathoms within a distance of 2 cables.

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* Dr. Livingstone, 1862.

† D. May, Master, R.N., 1861.

KILIMA MUNDO is a rather sharp well wooded peak, 350 feet high, on the south side of Rovúma river. Being the highest land in the vicinity it is seen over the trees near the coast from a few miles off shore, and as the elevated plateau north of the river has no conspicuous peak, Kilima Mundo cannot well be mistaken from seaward.

KILIMA MACHERIUKA, north of Rovúma river, is the south-east shoulder of a long flat range extending to the north-westward. From seaward this shoulder may be readily identified by three large baobab trees near the summit of its eastern face, one of which is 341 feet above the sea.

COAST.—From Rás Matunda the coast and reef take a general N.N.W. ½ W. direction to Rás Ruvura; the reef, which is steep-to, extends from one-half to three-quarters of a mile from the shore. The reef at Rás Ruvura is broken by a deep opening named Msimbati channel, about three-quarters of a mile wide at the outer part, leading into Mnazi bay; from the north side of entrance to this channel, the reef runs to the north-west for 10 miles farther, to a point 1¾ miles to the north-east of Rás Sangamku, where it turns to the westward for 1¾ miles, and then S.S.W. along the east shore of Mikindani bay.

There are two islands on the reef north of the channel into Mnazi bay called Mana Hawanja, and Mongo, the latter being connected with a small islet named Nakitumbi by a bank of sand which dries at a quarter ebb. Mongo, the larger of the two islands, is low, thickly wooded, and has a number of tall trees near its north-west extreme that show well from the northward. Mana Hawanja is also low and covered with trees; this latter island is almost divided near the south part, as the water washes through at high spring tides.

MNAZI BAY is a large sheet of water within the coral reef which surrounds the islands of Mana Hawanja and Mongo, the ship entrance to which is between the reef extending northward from Rás Ruvura on the south-east, and the reef projecting from Mana Hawanja island to the north-west, and the channel narrows to a little over 2 cables. This bay is about 8 miles long in a south-east and north-west direction, and about 5 miles across from the entrance to Mnazi village. The north-west and south-east parts of this extensive bay are shallow, but the middle is clear, with depths varying from 7 to 16 fathoms, sand and coral. A bank of sand over coral, extending from a half to 1½ miles off shore, fringes the coast round the bay from Rás Msimbati to Rás Sangamku, which makes landing difficult, unless at high water, when it is practicable at the village of Mnazi.*

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* *See* plan of channel and anchorage of Msimbati, on sheet No. 690.

Directions.—In entering the Msimbati channel, do not close the Msimbati or south-eastern shore nearer than 1½ miles until a conspicuous tree standing alone on Rás Msimbati, within Mnazi bay, bears S.S.W. ¾ W. This bearing kept on leads in until the south extreme of Mana Hawanja island bears N.W. ¼ N.; then steer S.W. ¼ W. (to avoid a coral patch of 1¾ fathoms, which extends 2½ cables off shore and 5¼ cables N.N.E. ½ E. of the conspicuous tree) until the tree bears S.E., when it can be steered for and the ship anchored as convenient in from 10 to 15 fathoms, sand. H.M.S. *Nassau* usually anchored in 10 fathoms, sand and coral, with Rás Msimbati tree bearing S. ¼ E.; Outer tree on reef, N.E. ¼ E.; East extreme of Mana Hawanja island, N. by. E.

Should the wind be blowing fresh in squalls from between N.E. and N.W., a better anchorage will be found southward of Mana Hawanja island, and to reach this anchorage, steer in S.S.W. ¾ W., as before, for the conspicuous tree on Rás Msimbati until the south-west point of Mana Hawanja island bears N.N.W. ½ W., then steer N.W. and anchor in from 10 to 13 fathoms as convenient.

Fungu Achumbu is a coral reef which dries in patches at low water; its north end lies W. by N. ¼ N. a mile nearly from the conspicuous tree. The reef runs from this point about south-west for 1¼ miles, with a breadth varying from a quarter of a mile to a mile nearly; at 3¼ cables E.S.E. of the north end of this reef is another small patch awash at low water, with deep water between it and Fungu Achumbu. A small coral patch which dries at low water, lies nearly a mile N.W. of the conspicuous tree; this patch is on a bank of sand and coral nearly in mid-channel, and upon which the depths are very uneven, varying from 1¾ to 5 fathoms, to the extent of three-quarters of a mile.

There are several other small shoals in Mnazi bay, but the seaman must be guided by the eye, the lead, and the chart, if intending to thread his way to an anchorage off the village of Mnazi.

Mnazi is a small village in the south-west bight, from which the bay derives its name; the population is about 300, but there are more people in the neighbouring plantations, who bring the produce of their fields, &c. to Mnazi for barter with traders from Mikindani.

Supplies.—Only a few fowls, eggs, and goats are to be obtained between cape Delgado and Kiswere harbour.

Mangrove wood for steaming purposes can be procured on any part of the coast, but if labour cannot be obtained from the shore, it is as well, if possible, to shun the fever breeding swamps in which the mangrove generally thrives.

Water for boats employed cruising may be obtained from the well at Keonga, and also from a well near the coast about a quarter of a mile north of Rás Msimbati in Mnazi bay, but there is no place between cape Delgado and Mikindani bay where a ship could obtain water with facility.

Tides.—It is high water at Msimbati, full and change, at 4h. 0m.; springs rise 11 feet. The stream in Msimbati channel runs from 4 to 5 knots at springs, with heavy overfalls off the point of the reef south-east of Mana Hawanja island.

There is very little tidal stream felt in Mnazi bay; outside, however, the stream takes the direction of the coast, the ebb running to the north-westward and the flood south-eastward, with a velocity of from 2 to 3 knots an hour at springs, and strongest near the reefs.

MIKINDANI BAY lies between Rás Sangamku (Rohamba point) on the south-east, and cape Paman on the north-west. The bay is about 4½ miles wide between the reefs, and 4¾ miles deep. The only anchorage is on the east side, between Shangani shoal and the coast reef. Mikindani bay may be readily identified from seaward by Mlima Mjono, a remarkable conical hill 617 feet high, covered with trees, and also, if within 7 miles of the entrance, by the Hull rocks at the north point, a curious mass of conglomerate coral, covered with brushwood. Both sides of the bay are low, and thickly wooded, while at the head, in the south-west part, over Mikindani harbour, the hills rise to a height of from 400 to more than 500 feet.*

Coast Reef.—Mwamba Aveu, in continuation of Mwamba Songa, the coast reef from the south-east, extends N. by W. 1½ miles from Rás Sangamku, dries in large patches at low water springs, and then borders the shore of Mikindani southward to Mwamba Ribunda.

Mwamba Ribunda extends about 6 cables from the shore on the east side of the bay, and forms the east side of the channel into Mto Mtwara.

Shangani Shoal is a small patch of coral and sand, lying in the fairway of the entrance to Mto Mtwara, with deep water all round it; on the shoalest part are 3 fathoms, from which Rás Richemerero bears S. ½ W. distant 2 miles nearly.

Mwamba Shangani is an extensive coral reef stretching from the south side of the bay, and terminates in a shoal point 1½ miles N.W. by N. of Rás Richemerero; thence it extends E. by S. one mile, then turns abruptly to the southward, and forms the west side of the channel into Mto Mtwara.

Mwamba Dadi, on the east side of the channel leading into Mikindani harbour, is an extensive sand bank, with large patches of coral on it, which partially dry at low water springs; shoal water extends for 2 cables off its north extreme, which is N.E. by E. ½ E., 2⅛ miles from Pemba point. The east edge of the bank forms the west side of the channel into Misete creek.

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* *See* Admiralty chart:—Mikindani bay, with views, No. 684, scale, $m = 2 \cdot 0$ inches.

On the north-western side of the bay, the coast reef from cape Paman to the southward extends more than half a mile from the shore and is steep-to, but on nearing Mikindani harbour, the reef diminishes in breadth and becomes less steep.

MTO MTWARA.—This spacious and well sheltered harbour is on the south-east side of Mikindani bay, the entrance being between Mwamba Ribunda and Mwamba Shangani, bearing S.E. by S. 4 miles from the outer Hull rock.*

From the entrance of the harbour, to the anchorage, the deep water channel is from one to 2 cables wide, and not so tortuous as the channel into Mikindani harbour. Messemo sand spit on the east side of the channel, and about 1½ miles within the entrance, is steep-to; having rounded this spit the full extent of the harbour is seen. On the south side of the harbour is a creek extending S.S.W. for about a mile, then S.E. by S. for another mile, when it becomes lost in the mangrove.

Anchorage.—From Messemo sand spit, the harbour extends E.S.E. 3½ miles, with a breadth of from three-quarters to nearly 1½ miles, and has good anchorage nearly all over it, in from 6 to 14 fathoms.

The best berth for a short time is near Messemo spit, in 14 fathoms, sand, with the end of the spit bearing N.W. by W. ½ W., Small cliff S.W., and Canoe point S.S.E. ½ E. If intending to make any stay, there is better anchorage farther up the harbour, in from 7 to 10 fathoms, mud.

Dangers.—There are several patches of coral and sand in the harbour with from 1¾ to 5 fathoms water on them.

A patch with 1¾ fathoms on it lies N.E. ½ E., half a mile from Muarie point, and another with 2¼ fathoms, N. ¾ W. about three-quarters of a mile from the same point.

A spit dries at low water springs, 1¼ cables off Canoe point, and shallow water with from one to 4½ fathoms, extends nearly 3½ cables from the point.

Directions.—Bound to Mto Mtwara from the northward, a S.E. by S. course for 4 miles from Huli rocks leads to the entrance, taking care to avoid the Shangani shoal, which lies a little to the eastward of this course. A large and remarkable tree (Finger tree), with the lower branches cut off and the trunk—1874—whitewashed, will be seen on the eastern side of the channel. This tree should be brought to bear S. ¾ E., and steered for on that bearing until Messemo sand spit bears S.S.W. ½ W., which course leads in mid-channel.

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* *See* plan of Mto Mtwara entrance and view, on sheet No. 684; scale, m = 3·0 inches.

Or, do not bring Shangani point (Rás Richemerero) to the westward of South, until Highest tree, upon the coast ridge on the east side of the bay, bears E.S.E., then steer for it on that bearing between Shangani shoal and Mwamba Shangani; when Finger tree bears S. ¾ E., steer in on that bearing until Mjono Shoulder (with high remarkable trees on the summit) is in line with Button rock, bearing W. by S.; a vessel will then be inside the east elbow of Mwamba Shangani, and may steer about S. by W. ½ W. for Messemo village, borrowing a little on the east shore.

When past Rás Richemerero, if entering on the flood tide, keep well over on the eastern side, and if with the ebb running out, keep towards Mtwara village to allow for turning, as the stream runs sharply round Messemo sand spit from 2½ to 3 knots an hour.

Nav. Lieut. C. E. Drake, H.M.S. *Philomel*, 1877, writes:—No vessel should enter Mto Mtwara with the sun ahead; with a good look out from aloft there is no difficulty, the eye and colour of the water being the best guide, as the marks cannot be seen.

Supplies.—There are three villages on the shores of the harbour, but neither food nor water can be obtained in any quantity.

Tides.—It is high water at Mto Mtwara harbour, full and change, at 3h. 45m.; springs rise 12 feet; the tides run strong at the western anchorage, and also in the channel.

MISETE CREEK (port Mossemo) is a narrow arm of the sea, the entrance to which is between Mwamba Dadi and Mwamba Shangani, and 3¾ miles S. ¼ W. from the outer Hull rock.

From the entrance the creek runs southward for 1¾ miles, and then expands into a shallow basin nearly half a mile across, with depths of 1¾ to 2¾ fathoms, sand and pebbles. A small vessel would be well sheltered here, but with the harbours of Mikindani and Mto Mtwara so near, the seaman would have no object in pushing into such a confined space. About half a mile from the head of Misete creek is a large sandy plain, which probably covers at high water spring tides.

MIKINDANI HARBOUR, generally known as Pimlea harbour, lies at the head of Mikindani bay, and its entrance is 4¾ miles S.S.W. of the outer Hull rock. It may be recognised by a group of light coloured trees on the east side of the entrance, with a dark tree in the middle of them, which is conspicuous at all times. The observation spot on the south shore of the harbour is in lat. 10° 16′ 31″ S., long. 40° 7′ 20″ E.*

Dangers.—At 2⅔ cables S.W. by W. ½ W. from Pemba point, is a rock with less than 6 feet over it, at low water springs; and in the south part of the harbour, 3 cables N.N.E. of the custom house, are two rocks awash at low water, with 4½ fathoms between them; a third rock lies nearly 2 cables from the custom house on the same bearing.

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* *See* plan of Mikindani harbour entrance, and view, on sheet No. 684; scale $m = 4 \cdot 0$ inches.

Directions.—Bound for Mikindani harbour from the northward, after passing Hull rocks at the distance of half a mile, a S. by W. ½ W. course leads up to about a mile east of Rás Managumba, a sharp rocky point on the west side of the bay. Thence steer S.W. until the clump of large trees on the east point, is in line with the high trees on a conical peak inside the harbour, bearing S.W. ¾ S. This mark should be kept on until the fort (a low white building with a large door in the middle facing the harbour entrance) is open of Pemba point; then steer for the western of two cocoa-nut trees, S.W. ½ W., which leads to the centre of the harbour. The cocoa-nut tree is very conspicuous, being—in 1874—whitewashed from the base to a height of 15 feet.

The above remarks are offered only to assist in piloting a vessel into the harbour, but the channel is so narrow that a vessel is more easily conned by eye when the sun is in a favourable position; the reefs on either side show at low water. When within Gunia point, the narrow entrance opens out into a spacious bay, in the greater part of which the water is shallow.

Anchorage.—The best anchorage is in 6½ fathoms, mud, with the fort bearing W. ¼ S., the custom house S.W. by S., and the extreme of Gunia point N.E. by E. ½ E.

Tides.—It is high water, full and change, at 3h. 50m.; springs rise 12 feet. The tidal stream in the harbour is scarcely perceptible.

Supplies.—Although there are several villages upon the shores of the harbour, no supplies are to be obtained, with the exception of a few fowls occasionally, and these the people show no desire to sell; there are neither cattle nor sheep in the vicinity, and fresh water is both scarce and bad.

Trade.—There are a few Banians at Mikindani, who trade with the tribes three or four days journey into the interior, sending cloth, brass wire, muskets, beads, &c., and receiving in exchange, gum-copal, ivory, seeds, and rice.

COAST.—From cape Paman, the north-west point of Mikindani bay, the coast to Mgau Mwania 10 miles to the north-west is low and bordered all along by the reef from three-quarters to 1½ miles from the shore, and the only remarkable feature being a black clump of trees 80 feet high, 3½ miles beyond cape Paman. When off Mgau Mwania, Mlina Mjoho, 617 feet high, will show as the southern extreme of the hilly range.

From Mgau Mwania to Lindi river, about 16 miles farther to the north-west, the coast continues low, with the reef extending from a half to 1½ miles from the shore.

The coast from Rás Kera to Machinga bay is low, with a few off-lying mangrove islets on the reef, but the land at the back is bold near Rás Kera. A reef extends parallel to the shore from 4 cables to a mile distant.

The coast from Mchinga to Mzungu is low with numerous off-lying mangrove islets on the reef. Inland, 2 or 3 miles distant, a wooded range 400 feet high extends parallel to the coast. From Mzungu to Kiswere harbour the coast is rocky.

MGAU MWANIA (Mungulho river).—The entrance to this river may be easily distinguished by the break in the land, when the river comes open on a south-westerly bearing, and also by the Madjovi or Mushroom rocks, on the western reef, 4 cables from the shore. These rocks are three in number, the southern and largest of which is 15 feet above high water, and shaped like a mushroom, the smallest is in the middle; at low water the reef dries around, and for 2 cables outside them.*

Off the eastern side of the entrance to Mgau Mwania, the Fungu Chosan extends seaward more than 1½ miles; from the depth of 3½ fathoms at its northern extreme, the high Madjovi rock bears W. by S. ¾ S., and the south-west extreme of Mkiya village S.W. ½ S. Madjovi rock is in lat. 10° 6′ 43″ S., long. 39° 59′ E.

From the western side of the entrance, Fungu Gomani extends 1¾ miles off shore, and dries in patches at low water.

With the exception of the Nymphe shoal, the approach to the river is clear between the reefs, with nearly a straight channel of from 6 to 12 fathoms deep, and 2 cables wide.

From Rás Swa-Swa the river runs in a S.E. ½ S. direction for 2 miles, and then trends about S.S.W.

Nymphe Shoal lies in the fairway of the river, with the high Madjovi rock bearing S.W. ½ W., and the south-west extreme of Mikiva village S.S.W. ½ W.; the least water on the shoal is 2½ fathoms.

Its 5-fathom limit is half a mile in extent, N.N.W. ½ W., and S.S.E. ½ E., and a quarter of a mile W.S.W. and E.N.E.; within these limits are several patches of from 2½ to 3½ fathoms, coral.

Dangers.—A rocky patch nearly a cable in extent, lies S.W. by W. 4 cables from Rás Swa-Swa, its eastern edge being 2 cables from the western bank. Another patch lies E. by S. ½ S. distant about half a mile from Rás Mgambera, near Sudi village; it is about three-quarters of a cable in extent, and its north-eastern extreme is nearly in the middle of the river.

Kisewa Jamadayah.—At nearly three-quarters of a mile to the S.S.E. of the patch eastward of Rás Mgambera, is a small island called

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* *See* plan of Mgau Mwania, with views, on sheet No. 681; scale, $m = 8 \cdot 0$ inches.

Kisewa Jamadayah, south of which the river is full of shoals, and not navigable for ships.

Tides.—It is high water at Mgau Mwania, full and change, at 3h. 45m.; springs rise 12 feet; inside the entrance the streams take the direction of the river, but outside, the flood runs to the northward, and the ebb to the south-eastward, with a force of from 2 to 3 knots, the flood being stronger during the south-west monsoon.

Directions.—Proceeding for the river, do not close the coast within 2½ miles, until the custom-house, a large white building in Sudi, is open, soon after a small sand beach to the right of it should be seen. The west extreme of this sand beach in line with the gap in the distant hills (*see* view on sheet No. 681), bearing S.W. by S., clears the west end of Nymphe shoal, and leads up to the entrance of the river. When Madjovi high rock bears S.W. by W., edge to the eastward until the custom-house in Sudi is its own width open of the sand spit extending from Rás Swa-Swa, which will lead up in mid-channel to the anchorage off Mwania.

Anchorage may be had in 9 fathoms, sand and coral, with the high Madjovi rock bearing S.W. ¼ W., and the south-west extreme of Mkiya village S. by W. ½ W., but in the N.E. monsoon this anchorage is much exposed to wind and sea.

There is good anchorage off the south end of Mwania village, mid-channel of the river, in 9 fathoms, mud, and also a quarter of a mile S.S.W. of Rás Swa-Swa, in 6½ fathoms, mud.

If bound to the anchorage S.S.W. of Rás Swa-Swa, keep as nearly as possible in mid-channel of the river, taking care to avoid the spit which extends nearly a quarter of a mile from that point, and also the rocky patch lying S.W. by W. of it.

Villages.—There are several villages on the banks of Mgau Mwania: on the east point of entrance is Mkiya, and about a third of mile farther in is the larger village of Mwania. Sudi, where the Governor of the district resides, is on the west bank of the river, and three-quarters of a mile S.W. by S. from Rás Swa-Swa, or about 3 miles from the entrance. The people are poor but civil and well disposed.

Supplies.—There are no supplies of any description to be obtained in the river, the well water in the village is brackish, and the only good water to be obtained is from Sudi.

LINDI BAY, the entrance to which is between Rás Shuka (Clarkson point) on the south, and Rás Banura (Kiremba point) on the north, is 5½ miles deep, and at the entrance between the reefs nearly 3 miles wide. The depths in the outer part of the bay vary from 50 to 230 fathoms, the coast reefs being steep-to, while in the inner part of the bay, westward of a line drawn between Rás Ekapahpah and Rás Rungi (Esmanti point), the water shoals rapidly.*

On the north side of the bay the coast reef in no place extends more than a quarter of a mile from the shore; but at Rás Shuka on the south side of entrance the reef extends off nearly half a mile, but thence to the westward to Rás Rungi, no where does it exceed 3 cables from the shore.

The outer edge of the Fungu Myangi north of Rás Shuka, is composed of dead coral and boulders, forming a ridge, the top of which is covered at three-quarters flood, and on it the sea at times breaks very heavily.

Approaching from the eastward, the land about Lindi bay cannot be mistaken as it is the highest on the coast between Zanzibar and Mikindani; the hills over the western shore, rising to a height of 976 feet, are well wooded, and cultivated in patches. Mlima Mdemba, 947 feet high, has a grove of cocoa-nut trees on its summit.

Approaching from north or south the great indentation in the coast, together with the high hills over the western shore, is sufficient to indicate its position.

Directions.—Bound to Lindi from the northward, the coast should be given a berth of a mile, until Rás Banura, a small cliffy point 25 feet high, is rounded. When the point bears N.W., Lindi fort, a stone building, under the cocoa-nut trees of the town, will be seen bearing W.S.W. *See* view on sheet No. 681.

Steer for the fort, keeping it well open of Rás Rungi, which clears the reef off Rás Nongerungo (Putuani point). Soundings will not be obtained with the hand lead until the custom-house, a square white building in Mwentengi (Esmanti) village, bears S. by W. After obtaining soundings steer to pass Rás Rungi, which is bold to within half a cable.

When Rás Rungi is abeam, steer W. by N. to clear the bank north-west of it taking care not to shut the mangrove islets off Rás Nongerungo, in with Rás Rungi, until Rás Rungh (Entrance point) bears S.S.W. ½ W., when steer with it a little on the port bow, and anchor as convenient.

Wishing to proceed farther up, Rás Rungh may be rounded at a cable off, and keeping on the east side of the river, a vessel may anchor if necessary, a little northward of the watering place, but the holding ground is not good.

Umtamar Shoal lies N. by W. ½ W., 1⅛ miles from Rás Rungi. It is 1½ cables long, and two-thirds of a cable wide, the least water on it being 1½ fathoms at low spring tides.

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* *See* plan of Lindi river, and Magau Mwania, with views, No. 681; scale, m=3·0 inches.

Sand Bank.—Off Rás Nando, the west point of entrance to Lindi river, is a sand bank which dries 4 feet at low water, extending E.N.E. 4¼ cables from the point. The eastern edge of this bank for 5½ cables, runs to the southward, taking the direction of the stream and forming a spit of from one to three-quarters of a cable wide, between which and the shore are from 1½ to 2 fathoms.

LINDI RIVER.—The entrance to the river is between Rás Nando and Rás Rungh, whence it runs about S.W. by S. for 3 miles, the width varying from 7 to 3 cables. After passing to the northward of the Gala islands, where the channel is deep but narrow, it continues about S.W. for 2 miles, to another island in mid-river ; between the Gala islands and the latter the river is about three-quarters of a mile across.

Fungu Mbachiwonaki is a bank of coral and sand which dries at half tide. Its north extreme is 2⅔ cables W. by N. ¼ N. of Rás Rungh, whence it extends S.S.W. ¼ W. 5⅓ cables. There is a 3-fathom channel for dhows to the westward of the bank.

Kisiwa Nunyi is a mangrove island on the west side of the river; between it and the west shore is a boat channel three-quarters of cable wide. This island is about half a mile long in a north-east and south-west direction, and varies in width from 50 to 250 yards; shallow water extends a long way off from its east side, and mud spits extend some distance from its north-east and south-west extremes.

Anchorages.—Fair anchorage may be had during the north-east monsoon between Rás Ekapahpah and Rás Mungu on the north side of the bay, in 8 fathoms, mud, with the south extreme of land to the eastward bearing E. ½ N., and Rás Rungi, S.W. by S. If only intending to remain a short time, good anchorage may be obtained off Rás Rungi, with Mwentengi custom house flag, bearing S.S.E. ¼ E., Rás Rungi, S. by W. ¾ W., and Lindi fort, S.W. by W., in 5 fathoms, mud.

The best anchorage, however, as regards holding ground, shelter, and convenience for visiting Lindi, is just outside the river entrance, with Rás Rungh bearing S. by W. ¾ W., Lindi fort West, and whitewashed tree S.E. by E. ½ E., in 9 fathoms, sandy mud.

Tides.—It is high water in Lindi river, full and change, at 4h. 5m.; springs rise at 11 feet. The tidal streams outside the bank of soundings are not strong, but from north of Rás Rungi to the river entrance they run from 2 to 3 knots, the ebb being very strong during the rainy season, and a vessel seldom swings to the flood.

Lindi.—The town of Lindi consists of about 500 wood and straw huts, built under a grove of cocoa-nut trees, the old fort, which is in a very dilapidated condition and has no guns mounted, being on the north-west side of it. The population was variously estimated at from 1,800 to 2,000, but the latter is probably nearer the number. The observation spot at the fort is in lat. 9° 59′ 30″ S., long. 39° 43′ 30″ E.

Imports.—European goods, hardware, &c., are imported, sent into the interior, and exchanged for gum-copal, rice, mtama seed, skins, ivory, &c. Nearly all trade is conducted by the Banians, who are to be found at most of the places on the coast. For some miles round Lindi the country is well cultivated, rice, mtama seed, manioc, &c., being grown in abundance.

Supplies.—About Lindi there are a small number of cattle belonging to the Banians, but they will not sell; there are no sheep; but fowls, eggs, and goats, are to be obtained in small quantities, though not sufficient to replenish the stock of a moderate-sized ship. All vegetables are scarce, and as the natives principally subsist on them, they also are difficult to obtain.

Water.—There are several wells in Lindi, but being below the level of the sea, the water is brackish. Good water may, however, be obtained at the watering place on the east side of the river, from a spring which passes under a turreted stone house just inside the mangroves, but it would be difficult to get in large quantities, except at high water, when boats could go up the creek.

A Hint.—The water in the Lindi river off the town is sufficiently fresh to clean a vessel's bottom of weeds and barnacles.

Current.—Capt. Ward remarks:—After passing Mafia island (coming from the northward) the *Thetis* in August, kept well into the bight near Lindi river, to avoid to some extent the strong northerly current. In the bight south of Mafia the current is chiefly to the west. The land must not therefore be approached at night, nearer than 25 miles.

Mto Mbanja is 3 miles to the northward of Lindi bay, and may be know by a large gap in the hills; inside the mouth, the water shoals to 3 feet. Dhows can enter the river at all times of tide. There is no anchorage off Mto Mbanja.

Rás Kibungwe, 2 miles to the northward, is a wooded point 50 feet high; at half a mile to the northward of the point is an islet closely resembling it.

Mto Kera is a small river immediately south of the point of that name. Between the reefs at the entrance there is a depth of 4 fathoms; but the mouth is so narrow that a heavy swell caused by the surf on either side, rolls in and makes it dangerous for boats to enter. Rás Kera is a bold looking green mangrove point.

MCHINGA BAY (port Nungwa), between Rás Mzinga on the south, and Rás Rokumbi (Nungwa point) on the north, will be known by the indentation it makes in the land; the gap shown by the Mto Namgaru, at the head of the bay, and the mangrove islets on the coast reefs, extending from the two points of entrance. These reefs surround the points and both the north and south sides of the bay, until near its head at a distance of a half to three-quarters of a mile.*

The town of Mchinga is in the north-west corner of the bay, and stands in a cocoa-nut grove. The chief resides at Mchinga village on the south shore. No supplies or water can be obtained.

Anchorage.—There is anchorage at the head of the bay, in from 3 to 5 fathoms, sand, with Rás Mzinga S.E. or S.E. ½ E., and Rás Rokumbi N.E. ¼ N.; in this position a vessel is partly sheltered by the Mwamba Mahazamu, from the swell which is thrown into the bay at all seasons.

Directions.—To enter Mchinga bay, the gap made by the Mto Namgaru bearing West, leads clear of the coast reefs, beyond which the bay is clear of dangers; no soundings will be obtained with the hand lead, until the tall mangroves on the south shore bear S. ½ W. when the depth suddenly decreases from 50 to 9 fathoms, after which, anchor as convenient.

Mto Namgaru.—The entrance is blocked by the Fungu Namtamwa which only admits boats at high water. It was not explored, but the chief stated that its waters were salt, and that a canoe could ascend it in three days journey.

Tides.—It is high water in Mchinga bay, full and change, at 4h. 0m.; springs rise 12 feet.

Nondo and Ruvu Bays are both shallow indentations of the coast. There is no anchorage in these bays, as the water is deep close to the reef, which borders the coast at a distance of 3 or 4 cables. There are no dangers outside the reef.

Mzungu Bay.—Mto Bwamkuro discharges itself in the north part of this bay; during the rainy season the water is discoloured a mile seaward. A sand bank bars the entrance of the river to boats at low water, and on a rising tide there are heavy overfalls.

Fair anchorage may be obtained in the southern part of Mzungu bay in 9 fathoms, sand and coral, with Rás Bwamkuro bearing N. by W. ¾ W., a brown cliff at the entrance of river N.W. ½ N., and centre of village S.W. ½ S.

KISWERE BAY, between Rás Bwamkuro (Masongo) on the south and Rás Fughio (cape Nourse) on the north, is clear of danger with the exception of the coast reefs. Rás Bwamkuro, the south point of the bay, is 20 feet high; the reef extends from it 2 cables, and thence along the coast round Grant point, and the swampy shore within it at nearly the same distance to Rás Bobare. The soundings are irregular, as at about a quarter of a mile S.E. of Rás Bwamkuro there are only 2½ fathoms, at the same distance to the N.E. 5½ fathoms, and a mile beyond, and no farther off, the depth is 66 fathoms. The shore facing eastward is backed at three-quarters of a mile inland by a flat range of hills 300 feet high.*

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* *See* Admiralty plan:—Mchinga bay, with view, No. 677, scale, m = 4·0 inches.

Rás Fughio, the north point of the bay, is 29 feet high; the reef here closes within a cable of the point, and then with several islands on it skirts the coast at a distance of 3 to 1½ cables south of Rás Berikiti. The coast hills about three-quarters of a mile within Rás Fughio range about 150 feet high.

The water will be found slightly discoloured on approaching the bay; there is a depth of 185 fathoms, about 1½ miles S.S.W. of Rás Fughio, and 95 fathoms, black mud, a mile from the entrane of the harbour.

Anchorage.—There is no anchorage until within half a mile of the harbour, when the soundings rapidly decrease from 25 to 13 fathoms.

Mlima Mamba.—The most remarkable features on approaching, are a conical hill 419 feet high, called Mlima Mamba (Piccolomini hill) 1½ miles inland, and Pandawi a very conspicuous square cliff, on the coast at the head of the harbour, which bears W. ½ N. when the entrance is open.

At a short distance from the coast the hills are of moderate elevation, the table land to the northward rising to a height of from 200 to 350 feet.

KISWERE HARBOUR is quite clear at the entrance, which is between Rás Berikiti (Harbour rocks) on the north, and Rás Bobare on the south; a coral reef which dries at half tide, extends 1½ cables off Rás Berikiti, its outer edge is steep, having 4 fathoms water close to it. Ras Bobare, on the extreme of which is a clump of mangroves, has a small reef and shallow water about 1½ cables off it.

Within the 3-fathom line, the water is shallow and the bottom even, as far as the bar of the river which stretches across the north-west corner of the harbour; upon it the sea occasionally breaks heavily.

Directions.—When approaching Kiswere harbour, if towards low water, the sea will probably be observed breaking on the bank inside, and on the coral reef off Rás Berikiti, which, when recognised, may be rounded as close as convenient; but if the reef does not show, give the point a berth of a quarter of a mile. A good mark for entering is the small red cliff on the south side of the harbour, in line with a distant peak bearing W. by S. ¼ S., (*see* view on plan No. 687,) until Mlima Rubaha, a remarkable hill to the north-westward, with a large tree on its summit, is just open of the west point of the inlet, when a vessel can anchor in 4 fathoms, mud, at low water; or after rounding Rás Bobare, steer W. by S. until a conspicuous sandy beach on the north shore bears N. by E.

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* *See* Admiralty plan:—Kiswere harbour, with view, No. 687 scale, $m = 3 \cdot 0$ inches.

Anchorage.—H.M.S. *Nassau* anchored in 4¼ fathoms, stiff black mud, with the sandy beach bearing N. by E., and Rás Bobare in line with the point east of it. The holding ground here is good, and this would probably be the best anchorage in either monsoon.

The Inlet or arm of the sea, in the north-west corner of the harbour, trends N.W. for about 2 miles, and then divides into two branches, the southern one being shoal; the other branch runs generally about N.N.W. for 2½ miles, to the fork, in the western arm of which is the landing place. From the western point of the entrance nearly up to the fork, a distance of 4½ miles, 3 fathoms water may be carried, but above it the inlet becomes insignificant, and there is a patch of rocks in mid-channel a mile below the fork. The banks are mostly mangrove swamps, with higher, well wooded, and partially cultivated land in the background to the eastward, but to the westward the country for about a mile inland is inundated at high water spring tides.

The anchorage off the village of Mtumbo is only fit for a very small vessel to approach at high water, as the bar across the entrance of the inlet has only 6 feet on it at low water springs.

A bank about 2 cables in extent, and which is awash at low water springs, lies on the eastern part of the bar, a mile W. ¾ N. from Rás Berikiti, and 3 cables from the shore. The deepest and narrowest part of the bar is S. ½ E. 6½ cables from Mtumbo village.

A good mark for entering the inlet is Mlima Ruhaha in line with the west point of the inlet, until Pandawi cliff bears W.S.W., then edge towards the eastern shore, which is the deeper side, and anchor as convenient off the village.

Water.—There are wells of water at the village of Mtumbo, but it is brackish and unfit for use by Europeans.

Supplies.—In the south-west corner of the harbour is a small fresh water stream, up which a boat can go at half tide to the large village of Kiswere, where a few supplies, such as goats, fowls, eggs, &c., may be obtained, but there are no cattle or sheep in the vicinity. The natives are civil and well disposed, but indolent, and only cultivate ground sufficient for bare subsistence.

Tides.—It is high water in Kiswere harbour, full and change, at 4h. 25m.; springs rise 12 feet.

COAST.—From Rás Fughio, the north point of Kiswere bay, the coast trends nearly in a straight line, with sandy beaches and small off-lying mangrove islets on the reef, to Rás Mombi, the southern point of Roango bay.

Roango bay is almost midway between Kiswere bay and Mto Porwe; it is a shallow indentation of the coast, not distinguishable 3 miles off. There is no anchorage for ships, but a narrow boat channel having 3 feet at low water, leads through the reef to a creek in the centre of the bay, which creek affords shelter to dhows. There is a small village on the sandy beach in the south-west corner of the bay, unapproachable by boats except at high water. A few fowls may be obtained.

The coast from Roango bay is rocky with small sandy bights to Rás Ngumbe Sukani, the latter being the highest point on this part of the coast; it may be known by being immediately south of two rocky islets, and if approached during the morning a white patch will be seen on its upper part. From Rás Ngumbe Sukani to Mto Porwe, the coast consists of a mangrove swamp with several small creeks which, according to native information, join a larger one leading to port Kilwa; the mouths of these creeks are not distinguishable from seaward. The reef between Kiswere bay and Mto Porwe is steep-to bordering the coast at a distance of 3 to 4 cables.

Mto Porwe, which separates the south end of Songa Manara island from the main, is only a boat channel available at high tide and smooth water, and communicates with Mkurulengamunyu creek the southern arm of Sangarungu harbour. It is not distinguishable from seaward, being overhung with mangroves; but the south point of Songa Manara may be known by a remarkable break in one of the projecting cliffs, which, when seen from the southward, appears like an island. The sea, when there is much swell, breaks through this cleft with great violence, throwing the spray to a considerable height, and giving the appearance of white smoke rising from the land.

SONGA MANARA ISLAND, which forms the eastern side of Sangarungu harbour, is all low with an indented rocky coast line trending north for 6 miles from Mto Porwe to Rás Kivurugu, the eastern point in lat. 9° 3′ 50″ S., long. 39° 37′ 30″ E.; thence the coast trends N.W. by W. 4½ miles to the entrance of Sangarungu harbour. There are many groves of cocoa-nut trees on the coast, and a particularly tall clump on Rás Kivurugu serves to assist in recognising it. The island is skirted by a reef which dries at various distances from the shore and off Rás Kivurugu for nearly a mile, and the edge is everywhere steep.*

Kivurugu Islands are three small low bushy islets, lying on the reef off Rás Kivurugu, the outer one close to the edge.†

SANGARUNGU HARBOUR.—Port Pactolus of the old charts—represents a large sheet of water, but is of little use as an anchorage. The harbour is surrounded by mangroves, encumbered by many reefs, with violent tidal streams, and the swell reaches far into the interior, so that a vessel having to go some distance in for a secure berth, renders it inconvenient. It has no proper rivers discharging into it, though many ramifications in the shape of mangrove creeks are used by the natives for local trade; but Kilwa being so near any trade from a distance finds an exit there.

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* The Directions from Songa Manara island northward to Rás Kimbiji, (in lat. 7° 0′ S.,) including Mafia island and channel, are by Commander Wharton, H.M.S. *Fawn*, 1877, and are adapted (with the proper names) to the charts derived from the survey of that year.

† *See* Admiralty plan:—Kilwa Kisiwani (Qwiloa of the Portuguese), No. 661.

There are several villages on Songa Manara island, of which Sanji-ya-Majoma is the principal; also the remains of Portuguese and Shirazi stone houses and towers.

Sanji-ya-Kati, with a village on it, is a mangrove island nearly in the centre of the harbour with an extensive reef stretching northward from it. The part of the harbour between Songa Manara and Sanji-ya-Kati—Owen's port Nisus—is very deep and it is not until the latter island is brought north that any convenient anchorage will be found. The portion of the harbour northward of Sanji-ya-Kati, called port Pactolus by Owen, is nearly barred to a large ship by a sandy shoal with 3 fathoms water on it, extending north from the north-east extremity of Fungu-ya-Kati towards Kilwa island, beyond which is good anchorage in 8 to 12 fathoms mud, but exposed to the swell that rolls in through the wide open entrance.

From this harbour there is boat communication at all times with Kilwa harbour by a wide passage west of Kilwa island. A narrow deep channel up this passage terminates without effecting a junction with Kilwa harbour, but it has not been closely sounded.

Caution.—The water in Sangarungu harbour is very thick and muddy and the dangers cannot be seen.

The Channel into Sangarungu harbour is three-quarters of a mile across from reef to reef, deep, perfectly clear, and opens to the north-east. The reef on both sides dry at low tides, and off Songa Manara island are some mangrove bushes close to the edge of the reef and distant three-quarters of a mile E. by N. of Rás Sangarungu, which can always be seen. On this side the reef is very steep, but the other shoals off for a cable. Rás Sangarungu, the northern point of Songa Manara, is sandy, crowned with high cocoa nut trees and faced with mangroves. Rás Mchangamra on the opposite side of the channel is low and of mangroves. At springs the tide in this channel is very strong.

KILWA ISLAND, which separates the harbours of Sangarungu and Kilwa Kisiwani, has a sea face of 4 miles with a general trend of N. by E. from Rás Mchangamra to Rás Kipakoni, where it turns to Kilwa Kisiwani. The shore is sinuous and for a mile to Watiro island is broken into mangrove creeks, it then becomes cliffy and trends N.W. by N. forming a deep bay, on the shore of which is the village of Msokole. The shore in the bight of this bay is sand, but as it sweeps round to the north-east to Rás Mvinja again becomes cliffy. Kilwa island is low and covered with trees; the northern part is a coral plateau elevated 45 feet above the sea and has many huge baobab trees on it.* The reef dries off to distances varying from 2 cables to a mile, following the line of coast, and is steep-to.

KILWA KISIWANI is the name given (in contradistinction to Kilwa Kivinje, a few miles north) to the village occupying the site of the old town (Quiloa of the Portuguese), and which was for several centuries the most important place on the eastern coast of Africa. The ruins of old Quiloa on the north-western portion of the island are extensive, but are mere foundations, excepting the castle, some mosques, and a large embattled space, the walls of which are still standing. The importance of Kilwa Kisiwani is long a thing of the past, the trade all passing through Kilwa Kivinje, but the harbour is an admirable one for steam vessels, and much more adapted for shipping goods than Kivinje, where a vessel must lie 1¾ miles from the shore, and at times exposed to a swell.

The village of Kilwa Kisiwani is small, and stands behind the old castle. An Arab, appointed by the Liwali of Kilwa Kivinje, is in charge. A few Hindis reside here. The old castle, a tall keep-like fortress, formerly white, is very conspicuous; the outer walls are in tolerably good preservation.

A large baobab tree stands on an open park-like elevated space, 45 feet above the sea, half a mile east of the castle, and marks the observation spot which is in lat. 8° 57′ 32″ S., long. 39° 30′ 54″ E. The word *Fawn* is cut in the tree in letters large enough to be seen from the Balozi spit, and the tree is one of the marks for entering the harbour.

Kilwa Kisiwani was for several hundred years the residence of the kings or sultans of an ancient Moorish family, whose territories extended from cape Delgado to Mombaza. In 1505 it was captured by the Portuguese under Francisco d'Almeyda, after a desperate resistance which induced him to burn the town. The climate is said to have proved so injurious to Europeans that the Portuguese gave up their conquest, and Kilwa was left to itself until about 1783, since which period it has been under Muskat, and now under Zanzibar.†

Castle Islet is a mass of mangrove near the edge of the reef off the castle, from which it bears N.W. by N. ¼ N. distant 2 cables. The harbour is mostly bordered by mangroves, and has a bad reputation for malaria, but it is no worse than Kivinje, and were the site of the dwelling-houses as a rule better chosen, would be more healthy.

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* Of these trees, remarkable for the large girth of their trunk compared to their height, Capt. Thos. Le H. Ward, writes :—Here are the finest baobab trees I have ever seen, one huge trunk measuring 90 feet in circumference.

† Captain Beaver, R.N., 1812.

The Channel into the harbour is deep, clear, and the reefs bordering the shore steep-to. At low water no other guide but the eye is necessary for its navigation, but at high water only the outermost parts break and the Balozi spit does not show its existence by a ripple, rendering a leading mark necessary. A stranger should, if he can, avoid entering with the strength of the flood with the sun ahead, as the tides run with great velocity. On the ebb the rush of water sometimes raises a sea between the outermost points of the reefs which at springs is dangerous for boats, and makes it difficult to realise that there is over 30 fathoms of water, where the overfalls take place.

Rás Matuso on the northern side of the channel, where the coast takes the bend westward towards the harbour, is low, of sand, and dotted with trees. To the westward the shore is composed of sand and cliff for 1¾ miles to Rás Mso, which is cliffy, about 10 feet high, and at the narrowest part of the channel. The channel may be said to commence south of Rás Matuso, where the southern portion of Rukyira reef—Ukyera of former charts—dries off for nearly 1½ miles, with a steep rocky edge. Close to this edge and south of Matuso is a large bush of mangrove, which is conspicuous on approaching from the eastward.

The southern side of the channel is formed by the reef off Rás Kipakoni, which makes a bold curve to the north-east, where it is three-quarters of a mile from the shore, and called Mwamba Kipakoni. On this reef is a small rocky islet near the edge, but not on the channel side. Between Mwamba Kipakoni and Balozi spit, the edge of the reef, except at the lowest tides, appears to curve in towards the shore, but this is a deception and caused by the really straight edge of the reef being somewhat lower than it is more to east and west, and being covered with a few feet of water. Opposite to this on the north side of the channel, the edge of the Rukyira reef bends outwards into the channel contracting the passage to a third of a mile. The sea on the edge of this bend does not always break; beyond, the reef trends back to the north-west and joins the shore at Rás Mso.

Balozi spit is rather higher than the part of the reef just east of it, but from being protected by the Mwamba Kipakoni only breaks when the water is low. Its extremity bears East from Rás Rongozi and is steep-to; to the west of the spit the edge of the reef runs straight in to the shore of Kilwa island. Rás Kipakoni is low and has some mangrove bushes on its western part which projects 1¼ cables to the northward on the western edge of Balozi spit.

Between Rás Mso and Rás Rongozi is Mso bay, which is shallow; the shore is sand, which terminates abruptly to the southward by low rocky cliffs, which are mostly black but showing in one part close to the bay a reddish yellow face. To the south of these cliffs the shore is fringed with mangroves to Rás Rongozi and round into the harbour. A sand and mud bank which dries extends in a S.W. by S. direction for nearly 2 cables from Rás Rongozi; it does not show except at low water, but there are many tide whirls off it.

The north shore of Kilwa island opposite Rás Rongozi is of a cliffy nature, but bordered by a narrow belt of mangroves and a small reef which is nearly steep to; the mangrove edge may be approached to 1½ cables. As far as Balozi spit no soundings under 25 fathoms will be obtained, and farther in it is equally deep, but there is a small bank with 18 fathoms on it, in mid-channel west of Balozi spit.

Kilwa Kisiwani Harbour is the lower portion of a large estuary which runs inland for 12 miles to the north-west, where the river Mavudyi discharges into it. It is generally very deep, but off the castle there is ample anchorage for many vessels in from 9 to 15 fathoms, completely protected by the projecting points of reef from the heavy swell that almost invariably beats on the outer shore, and is open to the sea breeze. The harbour channel takes a sharp turn north and then south.

A good berth is in 12 fathoms, with the Castle islet bearing W. by S. ½ S. the Castle S.S.W. ¼ W., flagstaff east of castle S. ½ W., and Rás Rongozi E. by N. ⅛ N. The reef dries off towards this position nearly 2 cables. The tidal streams are strong, and at this anchorage a vessel is often in an eddy, but as the bottom is exceedingly tenacious mud, a short scope of cable can be used and the anchor kept clear. There are convenient depths more to the north, but farther from the village.

The channel separating Kilwa island from the main is at its northern end very shallow and at low tides fordable; here is a ferry communicating with the island. There is another ferry from the village to a break in the mangroves north of Rás Rongozi.

Port Beaver, the upper part of Kilwa Kisiwani harbour, is a wide arm of the sea, shallow a few miles up, and dotted with islands where it begins to contract to the river Mavudyi, which is said to be navigable for canoes some distance.

The base of the Mpara hill, a flat-topped eminence 460 feet high, skirts the northern bend of the harbour; the hill is partially cultivated but mostly covered with jungle.

Directions.—In making Kilwa Kisiwani from any direction, the Mpara hill (Vidal hill of former charts) between Kilwa Kisiwani and Kilwa Kivinje, will be seen in clear weather from a distance of 20 miles. It is flat-topped and in no way remarkable, except being near Singino hill to the north, and the only eminence in the immediate vicinity. To the southward of Songa Manara island are other hills rather similar in appearance, but they are continuous, whereas south of Mpara is a low plain forming a break of 20 miles. In very clear weather the Machinga range, 1,200 feet above the sea, 20 miles inland, will also be seen, but the summits are not well marked.

The great Rukyira (Ukyera of former charts) reef is always to be seen 3 miles off, either dry or breaking. Rás Matuso (cape Quiloa of former charts) is tolerably conspicuous either from north or south, as it projects considerably.

Steer along the south-eastern edge of Rukyira reef at the distance of a few cables, when, except with the sun ahead, the old castle will be seen, dirty white and appearing like a white cliff in a mirage, closely backed by many trees of thick foliage which overtop it. When the castle is seen, steer for it until the bush on the edge of the reef south of Rás Matuso is clear of the latter, when the southern extremity of the white sand in Mso bay should be clearly seen with some yellow cliffs just to the left. Bring the extremity of the sand to bear N.W. by W. ½ W. (N. 62° W.), and steer for it, which course will lead in mid-channel past Balozi spit—extending from Philip point of former charts,—but care must be taken that the tide does not sweep the ship off the line of bearing.

When the Castle islet closes to within its own width of Rás Rongozi, put the helm hard a starboard and steer in mid-channel about S.W. by W. ½ W., with the observatory baobab tree right ahead; when the low mangroves off Rás Kipakoni bear East, alter course for the anchorage, with the Castle islet a little on the port bow.

In leaving the harbour the same bearings can be used, or should the baobab tree disappear or be screened by bush, bring the extremity of Rás Kipakoni to bear East, and steer for it until Rás Rongozi bears North, then alter course to N.E. by E., and bring the Castle islet near to Rás Rongozi, but do not let it close; and when the south extremity of Mso bay sand approaches the leading bearing N.W. by W. ½ W., alter course and steer on this line with the mark astern which will lead out.

Outer Anchorage.—There is narrow anchoring ground outside the harbour's mouth, extending three-quarters of a mile along the Rukyira reef, westward of the bush south of Rás Matuso. In the northerly monsoon temporary anchorage will be found in 10 fathoms water, sand, 2 cables from the reef. The farther eastward the better, to be out of the rush of the tides.

Caution.—The current runs continually to the northward off all this part of the coast, and frequently sets in towards the land. Vessels making the land should therefore steer to the southward of the desired point, and if closing at night heave to in ample time to allow for drift. The current is stronger and more regular during the southerly monsoon, when its strength increases at times to 4 miles an hour.

WINDS.—Easterly winds prevail here in the form of strong sea breezes most of the year, and generally occasion a considerable swell outside the harbour, so that if the wind falls light and is from seaward and a sailing ship be embayed here, it is sometimes a difficult and anxious work to get out: this consideration gives more importance to the only ground above mentioned where a vessel can possibly anchor outside.* There is no difficulty in going out of Kilwa Kisiwani early in the morning with the land wind.

Tides.—It is high water at Kilwa Kisiwani, full and change, at 3h. 45m.; springs rise 12 feet, neaps 7½ feet.

Supplies.—There is said to be no running water on Kilwa island; the inhabitants are supplied from wells. Cattle, goats, and fowls are fairly plentiful, and the island abounds with bush buck.

MWAMBA RUKYIRA is a large tongue of reef stretching off Rás Matuso in an easterly direction for 3½ miles. Its outer edge is very steep and the sea always breaks on it; the northern end terminates in a point from which Rás Matuso bears S.W. distant 4 miles. The reef is all dry at springs, and has many small mangrove bushes and sand heads on its eastern part, one of the latter, a mile south of the north extreme, is seldom covered. From the north point the reef trends in towards the shore with a curve to the south forming Rukyira bay.

RUKYIRA BAR.—From the north point of Mwamba Rukyira a long narrow rocky bar extends to the north for 9 miles, with very irregular soundings from 5 to 2 fathoms, and in one or two parts less. Though there are doubtless places where small vessels can at all times pass over it, yet it should not be attempted without good cause, as there is a very heavy swell on it, and from the irregularity of the bottom it is impossible to say that other shoal spots besides those marked on the chart do not exist. This bar practically blocks the southern passage into Kilwa Kivinje.

COAST.—From Rás Matuso the coast trends to the N.N.W. for 8 miles to Ras Tikwiri, and forms a shallow bay. It is all along bordered by a reef which dries off to a considerable distance, joining the Rukyira reef north of Rás Matuso. The shore is sandy and flat with several villages on it, backed by thick jungle, behind which rises the Mpara hill.

From Rás Tikwiri the shore turns sharply to the south and forms a deep but shallow bay, trending round in a N.N.W. direction to Rás Miramba, which bears N.W. ¾ N. 5½ miles from Rás Tikwiri. The shore is thickly lined with mud and mangroves, and sand banks dry off some distance.

Ruangale is a small reef only separated by a shallow boat channel from the shore reef. It dries 7 feet at low water springs, and from it Rás Matuso bears S. ¾ E. distant 5½ miles, and the north end of Rukyira reef S.E. ½ E. The sea always breaks on the outer edge.

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* Owen.

Rás Tikwiri, in lat. 8° 49′ 5″ S., long. 39° 29′ 50″ E., is a mangrove point broken at its extremity into isolated clumps of these trees, which look like islands. The outer clump is low and scattered, but the inner one is compact and formed of high trees, and appears from a distance and from some bearings to be the true point, but is nearly a mile N.E. by N. of the latter. The edge of the reef is one mile from the point, but only 3 cables from the extremity of the mangroves.

Rukyira Bay, between Rás Matuso and Rás Tikwiri, has excellent anchoring round at its southern part, where the great Rukyira reef protects a vessel from the swell. It is however of little use, except to small vessels, in consequence of the Rukyira bar blocking the outer part of it.

Mpovi Reef is the southernmost of the mass of reefs protecting the anchorage of Kilwa Kivinje, and its south-eastern end lies North 1¾ miles from the mangroves off Ras Tikwiri. On it are a few small mangrove bushes that always show, and are near the outer edge of the reef, which is tolerably steep-to and dries 11 feet. From this the reef stretches in a N.W. by W. direction for 2¼ miles, where it terminates with a sand head.

On all sides except the eastern, the reef shoals gradually off, and though 1¼ miles from the shore, the channel is only available for dhows or small vessels drawing 10 feet water. To the north the edge of the reef with less than 3 fathoms water on it, is 2 miles distant.

Mwanamkaya is a large reef lying N.E. of Mpovi, having a good passage with 8 fathoms water between. Its south-east extremity, where it terminates in a point, is 4 miles N.N.E. ½ E. from the outer mangroves off Rás Tikwiri. The reef extends 2¼ miles to the N.N.W., and forms the northern side of the South channel into Kilwa Kivinje. The south-western edge is not steep-to, but can be passed at the distance of a quarter of a mile. Near the north-west corner is a large sand head which only covers at springs.

Fungu Amana is a smaller reef than the two former, and lies off Rás Miramba, from which its south-west point bears N.E. by N. 1¾ miles. The reef is 1½ miles long east and west, and half a mile wide. It shoals off for 2 or 3 cables all round. The sea nearly always breaks on its eastern and north-eastern edges. The sand on its western end dries at half tide.

Ras Miramba is a low mangrove point, with shoal water extending more than a mile to the north of it, leaving a channel with 4 fathoms water, three-quarters of a mile wide, to the south-west of Fungu Amana. The bottom here is all mud and sand. To the westward of Rás Miramba the shore forms a shallow bay, facing north, as far as the entrance of the Gingwera river, a distance of 3 miles.

KILWA KIVINJE stands on the shore of this bay, a mile westward of Rás Miramba, partly enclosed with cocoa-nut trees: it is a straggling collection of huts and ruins, with a few stone houses and a small bazaar, and may contain about 3,000 inhabitants. Formerly the principal port for the exportation of slaves, but its importance has much diminished since the stoppage of that traffic, though there might be a considerable legitimate trade were it properly fostered, and as the mail steam vessels occasionally call here, it is possible the trade may increase.

The Liwali or Arab governor of Kilwa Kivinje, is supreme over all the coast and islands from cape Delgado to the north of the Rufiji, including Mafia island. He has a small guard of soldiers, and there is a prison to confine offenders.*

Supplies.—The town is amply supplied with wells, but there is no convenience for watering a ship. Cattle, sheep, poultry, and eggs are abundant, but vegetables (beyond the staple native crops of millet, manioc, and sweet potatoes) are not so easily procured.

Anchorage.—The anchorage of Kilwa Kivinje is open, though good protection is afforded by the reefs to the north-east, in ordinary weather, but when the monsoon is strong a little swell fetches through the passages. The sand and mud bank off Rás Miramba and the town, dries off a long way at low tide, and shoal water with patches of rock extends about 1¼ miles from the shore, at which distance it mostly drops suddenly to 4 and 5 fathoms.

A vessel should therefore be careful in approaching this anchorage, not to shoal the water to less than 5 fathoms at low tide. A good berth is in 5 fathoms, with the centre of Kilwa Kivinje bearing S. by W., the Gingwera tree W.N.W., and Rás Miramba S.S.E. ½ E. In this position a vessel will be 1¾ miles from the town.

Tides.—It is high water at Kilwa Kivinje, full and change, at 4h. 0 m.; springs rise 15 feet, neaps 9 feet, and neaps range 2 to 3 feet. There is but little tidal stream at the anchorage.

Hills.—At the back of Kilwa Kivinje a flat plateau rises 550 feet high, and is about 3 miles in diameter. This hill is called Singino, is well cultivated, and joins Mpara hill on the south by a low ridge. Its rim or edge is tolerably steep on all sides, and may be used for bearings. On the west, connected by a low spur, is a small conical hill called Nunguruku. Other small hills stretch away to the westward, but the general prospect in that direction is flat and uninteresting.

Mto Gingwera.—This mouth of this river is 3 miles to the north-west of Kilwa Kivinje, and the bar dries completely across at springs. The river can be ascended about 9 miles, and abounds in hippopotami.

On the north side of entrance is a remarkable solitary casuarina tree, which is conspicuous from outside the reefs, can hardly be mistaken on account of its size, and forms a most convenient object when entering the main passage north of Mwanamkaya reef.

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* *See* Admiralty chart:—Kilwa to Zanzibar channel No. 622; scale, m—0·17 inches.

Coast.—From the Gingwera river, the shore trends generally in a northerly direction, which it maintains with some slight sinuosities and points to Rás Samanga Fungu, a distance of 18 miles. For 7 miles, which reaches beyond Mtompiani village, the shore is a sandy beach, but farther on it is fringed with mangroves. There are villages all along the coast, but mostly concealed behind the mangroves. There are no reefs off this shore except at Rás Wango, but a sand and mud flat dries off to a considerable distance.

The coast is backed by a flat plain, which to the northward gradually slopes upwards to a number of low wooded ridges, parallel to the coast, which again rise to the higher range of Matumbi, 17 miles from the sea, averaging 2,000 feet in height. These mountains are the eastern termination of the high land that forms the southern watershed of the valley of the Rufiji.

Fungu Jewe is a large reef 3 miles north of Fungu Amana, leaving a deep and clear channel between, which is the main passage for vessels into Kilwa Kivinje. Fungu Jewe is 3¼ miles in length east and west, and is steep-to on all sides. Along the south-east face it breaks heavily, and is at all times visible. At half tide a long expanse of sand uncovers, which has no particular head.

Luala Reef.—This reef is 2 miles in length north and south, and 1¼ miles in breadth. It is 1½ miles eastward of the north-east part of Fungu Jewe, with a deep channel between. The sea breaks on the eastern edge, and the reef dries at half tide, but it is not so conspicuous as Fungu Jewe as it shows less white sand.

Fanjove Island.—This small island, in lat. 8° 34′ 15″ S., long. 39° 34′ 40″ E., is covered with tall trees, and stands on the inner part of an extensive reef running in a northerly direction for 5½ miles, on the edge of the deep ocean water. The south end of this reef is 3¾ miles to the south of the island. The outer edge of the reef is everywhere steep to with deep water close to it, and the sea always breaks. At low water it dries a few feet. The inner edge is broken and shoals off more gradually, and a mile W.S.W. of the south end are some patches with 3 fathoms water on them.

The MAIN PASSAGE into Kilwa Kivinje is formed by the Fanjove, Luala, and Jewe reefs on the north, and the Mwanamkaya and Amana on the south. This channel is clear of danger and 2¾ miles wide. No soundings will be obtained until midway between Jewe and Amana reefs.

Directions.—In steering for Kilwa Kivinje from the eastward, Fanjove and the larger island of Songa Songa to the westward, will be sighted on a clear day at a distance of 14 miles; and the Singino and Mpara hills under similar circumstances at 18 or 20 miles; both hills are flat, the Singino being the longer. To the south of Mpara hills nothing will be visible except in very clear weather, when the distant Machinga hills may perhaps be seen.

Steer so as to pass from 4 to 5 miles southward of Fanjove until the breakers are seen, when the eye will be the guide. A vessel should pass to the southward of the breakers giving them a berth of at least half a mile. If the weather be clear and the sun not ahead when Fanjove island bears N.N.E., the Gingwera tree will be visible from the deck, appearing against the sky on the horizon, and the hills behind dipping on either side toward it, *see* view on chart. Bring the tree to bear W. ½ S. and steer for it until the western end of Jewe reef bears North, when alter course to the S.W. for the anchorage off the town; the latter will be seen under the plateau of Singino.

Caution.—Inside the outer reefs the water is discoloured.

Songa Songa Island.—This is a coral island covered with trees, 2½ miles in length N.W. and S.E., with its south-east point bearing N.W. by W. 3½ miles from Fanjove. The island stands on a broad reef which dries at springs, and which is surrounded by extensive shallow water on all sides but the north-western, where Pumbavu a small sandy islet with a few scattered trees on it, is connected to the main island by a neck of sand half a mile long. At a distance of a quarter of a mile off this the water is deep and clear. On the point of Songa Songa nearest Pumbavu is a clump of tall trees conspicuous from north and south inside the reefs. There are two coral islets on the reef to the eastward of Songa Songa.

Songa Songa has a village on it near its eastern shore, and wells with tolerably good water in the coral nearly in its centre, which are difficult of access and best approached from its western side. Bullocks and goats are bred on the island.

Val Rock lies 2½ miles S. by W. ½ W. from Pumbavu islet, 1¾ miles from the nearest part of Songa Songa, and a mile outside its reefs. It has only 6 feet on it, with deep water around it, and should be given a berth when steering for the Luala channel. The rock does not show.

Pweza is a small reef lying 1½ miles north of Luala with a small but conspicuous sand head which dries 8 feet at springs.

LUALA CHANNEL is between Fungu Jewe on the west, and Luala and Pweza on the east, and is useful to vessels coming south that have taken the inner channel so far, but not bound to Kilwa Kivinje. The channel is 1½ miles wide, deep and clear, and the reefs on either side can generally be seen.

Fanjove Flats.—To the north of Fanjove island, the outer line of reefs is continued by a 3-fathom bank extending from Fanjove reef for 4 miles along the edge of the deep water to Fungu Imbi. The tide rushes over this flat, and in strong winds the sea breaks at its edge.

Fungu Imbi.—This reef is 2¼ miles in length north and south, the sand on it dries 7 feet at springs, and its south end is 5 miles north of Fanjove island. It is steep-to along its outer edge, and the sea breaks heavily.

Newni Pass.—To the north of Fungu Imbi, deep water extends in to the westward towards a narrow 6-fathom channel through the reefs south of Newni, but as no good leading mark can be given, and the swell being heavy on the edge of the shoal water, the passage is not recommended.

Newni Island.—This is a small coral and sand island with bushes on it, and two or three taller casuarinas on its eastern side; which can be seen from the deck of a vessel at a distance of 12 miles. The outline of Newni from a distance is flat, with the casuarina trees appearing above the general level.

The island bears N. by E. 11 miles from Fanjove island, and lies on the western side of a large reef which dries at low water, and is steep-to on its seaward side; the reef is 3¼ miles in length N.N.E. and S.S.W. Turtle frequent this island and Okuza north of it, from February to July.

Fungu Mombawaka extends more than a mile north and south at its seaward edge, and 1¾ miles east and west, having a small area just awash at low tides, the remainder of the bank having a few feet of water always over it, and the sea generally breaks. It lies north of Newni reef, and is separated from it by a narrow 5-fathom channel, a quarter of a mile wide. There is another passage to the north of it, but too narrow to use without beacons.

Okuza Island, in lat. 8° 16′ 25″ S., long. 39° 35′ 54″ E., is a small narrow sandy island, covered with casuarinas, the highest of which are at the eastern end, and can be seen 14 miles from the deck of a vessel. The island is on the north-west part of an extensive reef, which is 3¼ miles in length at its seaward face, and where it is quite steep-to, and 2 miles across at its widest part. It is all dry at springs, and tolerably steep-to on the other sides.

To the north of Okuza is a break in the chain of reefs for 8 miles to the reefs of Kibondo island, leaving a clear deep passage into the Mafia channel.

Anchorage.—There is anchorage inside the Okuza reef, in from 8 to 15 fathoms, but in the north-east monsoon a berth well to the south-west should be chosen to avoid the swell.

INNER REEFS.—Between the outer reefs and islands before mentioned, and the main land south of the Rufiji, is an inner chain of reefs, which for the most part have navigable channels between them. There are, however, two main routes that will generally be useful to ships, and the reefs bordering these will be described, commencing from the southward.

Pwajuu Reef is 1½ miles in length, and half a mile in breadth, and lies S.W. ¾ W. 3½ miles from Pumbavu islet, and W. by N. 2¼ miles from the Val rock, with a deep channel between it and the latter. A long extent of sand on the reef dries at half tide. The eastern side of the reef is steep-to, and can generally be seen.

Poiasi Reef, three-quarters of a mile north of the latter, is 2½ miles in length, in a N.W. and S.E. direction, and half a mile in breadth. The sand on it dries over an extent of 1½ miles, the highest part of the sand being towards the north, where it dries 11 feet at springs. The eastern edge of the reef is steep-to.

Here the eastern and western channels divide; the reefs bordering the eastern channel are the :—

Fungu Baniani, 3 miles N. by E. of Pumbavu islet, has sand on it, which dries 10 feet at low water springs. Its eastern edge is not very abrupt and should be given a berth of half a mile.

Sanders Rock is 1¾ miles S. by E. of Fungu Baniani, and 1⅔ miles N.E. by N. of Pumbavu, and has only 7 feet water on it at low tides. This danger cannot be seen.

The left fall of Singino hill on with the left extreme of Pumbavu islet, S.S.W., leads in 4 fathoms, between Fungu Baniani and Sanders rock.

Mzuaji Reef lies 3 miles N.E. ½ E. from Pumbavu islet; it has no sand on it, and dries 2 feet at the lowest tides.

Kimbore is a small reef one mile west of Newni island, with a sand head and a large rock on it, both of which dry 7 feet. At high water, Kimbore is not always easily seen; its western edge is tolerably steep. The passage between Newni and Kimbore is not good, as the water shoals off from the latter reef.

Bawara is the general name of a number of reefs which lie to the north-west of Newni island, the nearest being 2½ miles distant, with a 4-fathom channel 1¼ miles wide between it and Kimbore reef. These reefs cover an area of 2½ miles north and south, and 3 miles east and west, and show four sand heads when dry. The eastern reef is not steep, and a vessel taking this route should give preference to the Kimbore side. The reefs on the west side can be passed tolerably close, but there is no necessity to do so.

There is a small coral bank with 3 fathoms water on it, lying 2½ miles S.W. ½ S. of Okuza island. To the north of this the passage is clear.

The reefs bordering the western channel are as follows :—

Machangi, the name of a collection of reefs lying 6 miles N. by W. ¼ W. of Pumbavu islet. The south western reef is N.N.W. 4¾ miles from Pumbavu, and dries at half tide ; its edge is steep, but does not show well.

The north-western reef has conspicuous sand on it, which is only covered at high water, and except at that time is an excellent guide for the channel. The sand is near the western edge of the reef, which is fairly steep to on that side.

Chocha is a reef 2 miles in length, uncovered at low water, with sand on its north-west extremity, which dries 9 feet. The south-east end tails off for 2 cables, but it can generally be seen showing green under water. The eastern point of Chocha is W. ½ N., 1¼ miles from the conspicuous sand on Machangi.

Membeuso is 2¾ miles N. ½ W. of Machangi and is a smaller reef, the sand on it dries 8 feet, and its eastern edge is quite steep. Simaya island bearing N. by E. clear this reef to the eastward, until Machingi can be seen.

Banda is a small reef with sand on it which dries 8 feet. It lies N.E, 2½ miles from Machangi sand, and its western side is not steep-to.

Simaya Island.—This small sand island is covered with high trees and visible from the deck of a vessel at a distance of 14 miles. The island is surrounded by a reef of oval form, three-quarters of a mile in length, which is steep-to.

Rás Samanga Fungu, 18 miles northward of Gingwera river, is a point of high mangroves, conspicuous from the north when in shore. Immediately north of it is the Samanga Fungu creek with a small village of the same name.

Samanga Ndumbo is the name of a large village and creek, 1¾ miles north of Rás Samanga Fungu. It is the largest village between Kilwa Kivinje and the Rufiji, and is quite concealed from the sea ; there are Banians here. The estuary contracts at a short distance from the sea and is said to join another creek which debouches a mile to the north-east.

Rás Ndumbo is a mangrove point with a large detached bush of the same name off it. From this Simaya island bears E.N.E. distant 8½ miles, and Rás Pombwe N.E. by N. 5¾ miles.

Mohoro Bay is the deep indentation with shallow water, between Rás Ndumbo and Rás Pombwe. It is lined with a thick belt of mangroves and a large portion of it dries at low water.

Kitope Hill is a conspicuous flat-topped hill, 780 feet high, rising in the plain 5 miles from the head of Mohoro bay. It is thickly wooded, and has a lower spur to the north with a small conical-shaped summit on it.

RUFIJI DELTA.—In Mohoro bay commences the remarkable maze of creeks which form the delta of the Rufiji and Mahoro. Some of these creeks do not communicate at ordinary times with either river, neither do the rivers themselves ever join, though at one point in their courses they approach one another closely; but in the rainy season of the interior, December and the two following months, the whole plain is frequently flooded, when the water doubtless escapes by either river indifferently, and all the large mouths that open to the sea assist to carry off the surplus.

The delta has been pushed forward in advance of the general line of the land, and now forms a convex projection with a coast line 50 miles in length, which is all low and of a uniform outline as viewed from the sea. Mangroves occupy the greatest portion of the shore line, and extend back for a varying distance from it. Inside the swampy belt is a broad flat plain, covered with long grass and a few trees, and dotted here and there with small villages, in the vicinity of which and near the rivers is cultivation. This plain is 35 miles north and south between the boundary lines of Matumbi and Mtoti hills.

In Mohoro bay, west of Rás Pombwe, are the two mouths of the Mohoro, and a large salt water creek. From Rás Pombwe, the general direction of the coast is N.N.E. for 30 miles to Rás Twana; here the coast turns sharply to the north-west for 11 miles to the village of Kikunguni, standing on the northern shore of the entrance of the Kikunya. On this extent of 41 miles of coast, 10 large mouths open into the sea, eight of which are connected at all times with the Rufiji, the other two being only salt water creeks. All these mouths are connected by a series of small creeks, through the mangroves near the sea, that serve at high water as passages for canoes from one village to another without the necessity of crossing the bars.

Kikwaju.—The entrance of the Kikwaju, a broad but shoal water creek, is at the north-west corner of Mohoro bay. On the western shore, a short distance up, is the village of Marendego.

From the entrance of the Kikwaju, the shore trends out E. ¾ N. to Rás Pombwe and contains the two mouths of the Mohoro.

Utagite and Lokotonasi are huge mangrove lined creeks, with 2 and 3 fathoms water in them at low tide, which join together 3 miles to the N.N.W. where the Mohoro proper begins. The Utagite always has 3 feet at the lowest tide on its bar, which is 2 miles outside the entrance. There is no swell on the bar, and the channel is perfectly straight. The tangent of the left side of the river looking in kept N. by W. ⅝ W. will lead a boat through it. The sea breaks on the sand banks on either side at half-tide with any wind.

Mohoro River.—The Mohoro is 200 yards wide where it joins the Utagite, and at the highest point reached by the *Fawn's* boats, 14 miles in a direct line from the coast, was 80 yards in breadth, but had at that distance become so shallow that the steam cutter could get no farther. Here were numerous villages and cultivation, the banks of the river were from 10 to 20 feet in height, and where not scoured into cliffs by the current, densely covered with vegetation. The tidal influence extends above this point.

The Mohoro is probably principally fed from the Matumbi hills, which run far to the westward. The land route from Kilwa to Dar-es-Salaam passes through these villages. Batalas ascend the river for trade.

Rás Pombwe is the eastern point of Mohoro bay, and is of mangrove. From it, Simaya island bears E. by S. ¾ S., distant 5¼ miles.

Fungu Okambara is a long coral and mud reef that stretches off it for 3½ miles in a S.E. ½ E. direction, and dries 8 feet.

North of Okambara, is another large reef, which also dries 8 feet. There is a bay with 8 fathoms water, between the two.

Pombwe Creek is a large lake like estuary, with a mouth half a mile wide, which runs in shore in a N.N.W. direction from Rás Pombwe for 2½ miles, where it ends in mangrove swamps. Bachambao is the name given to the southern branch of it, and Rás Pombwe is also called by some Bachambao.

Yaya Mouth is 4 miles north of Rás Pombwe, and is the southernmost creek, having a connection with the Rufiji. There are several ramifications of it unexplored which probably lead north and south into the adjacent mouths. The river is called the Kiegieni or Rufiji-ya-wake and leaves the Rufiji at a point N.N.W. 12 miles from this mouth. The upper part of this branch is too shallow to allow a boat to reach the Rufiji by it in the dry season.

It is 1½ miles wide at the entrance, and the bar which is 1½ miles outside never entirely dries, and there is a nasty swell on it in ordinary monsoons. There is a village called Yaya on its left bank at the entrance, and a mile to the north is a double-headed clump of tall trees.

Bumbura, the next creek, 3½ miles to the north, was not explored, as the bar could not be crossed. It is reported as only a blind creek, connecting by narrow passages the branches north and south of it.

Ndahi Mouth is 7½ miles N.E. by N. from the Yaya, and can be distinguished by a thick and high grove of casuarinas on its northern bank. The sea rolling in through the break in the outer reefs south of Kibondo, makes the bar bad at all times. At a distance of 2½ miles from the mouth, the creek joins the Kiassi branch.

Kiassi Mouth, 5½ miles N.E. by N. of the Ndahi, is a broad arm, which 5 miles to the south-west joins the latter.

Above the fork it takes the name of Kimero, and runs through open grassy country. At 3 miles farther to the W.N.W. is the junction of the

Usembe, which leaves the Rufiji 3 miles below the Kimero. Neither of these rivers afford a passage for a small steam launch in the dry season, unless perhaps at the highest tides, but this is doubtful.

The Kimero leaves the main river at a point 10½ miles in a straight line from the Kiassi mouth, and has a course of 17 miles.

Msala Mouth may be looked upon as the true mouth of the Rufiji, although one of the smallest; but fresh water and terra firma are much sooner reached than in the larger mangrove entrances. It opens abreast Boydu island, from which it bears N.W. by W. ½ W. distant 5½ miles. Sand and mud dries off the Msala for 3 miles, and at low water springs entrance is impossible. There is a considerable swell on the bar when the wind is fresh. The deepest water will be found rather to the northward of a line joining Boydu island and the entrance.

Immediately inside is a large creek trending to the southward, and where is situate the village of Msala. At 5 miles up the main branch, at a distance of 3 miles in a direct line from the sea, the mangrove belt is passed; for 7 farther it is bordered by dense forest, in which are rice clearings, and then at the point where the branches to the north fork off, and where the Rufiji proper is reached, it emerges into open country. A few miles from the sea, it takes the name of Bumba; its average breadth is from 80 to 150 yards, and depth 2 fathoms.

RÁS TWANA, the eastern point of the delta of low mangroves, is 8½ miles N. by W. ½ W. from Boydu island, and 6 miles N.E. by N. of the Msala mouth. The bank stretches off it for 3½ miles to the E.S.E., and is tolerably steep-to, but not visible unless when the sea is breaking.

Twana creek is immediately to the westward, but it is only a blind creek.

Kiomboni Mouth is 2 miles N.W. ¼ W. from Rás Twana, and is one of the large mouths of the Rufiji. The river runs through dense mangroves, with a width of 400 yards, and a depth of from a half to 3 fathoms, for 12 miles, before it joins the Simba uranga.

SIMBA URANGA is the branch of the Rufiji best known to the coast traders, who resort there to load with timber for house rafters for Zanzibar. It has no bar, but the water is shallow for more than 5 miles from the land, and at low water there is sometimes a considerable sea, raised by the ebbing tide. There are some mud banks just awash at low water springs, lying 8 miles from the entrance, which must be passed to the northward.

Steering S.W. ½ S. for the centre of the river's mouth, a boat will carry 8 feet water in, at the lowest tides.* Inside, the water deepens to as much as 10 fathoms, but only for a short distance. Above, the estuary is 300 to

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* It is probable that this varies from year to year.

400 yards wide, and carries a depth of from one to 3 fathoms, to its junction with the Kiomboni 10 miles to the south-west. Several creeks to the north communicate with the Kikunya branch.

Immediately inside the entrance, the large ramifications of Suninga, branches off to the south and rejoins again 8½ miles to the south-west. There are several villages in the creek, Suninga being the largest. The courses of both the Simba uranga and Suninga lie entirely through mangrove swamps. If going to ascend the Rufiji, the Simba uranga or the Kikunya are the best mouths to choose on account of the absence of bars.

Kikunya Mouth is the northernmost and largest of these great openings. It is 3 miles N.N.W. of Simba uranga, and is 2½ miles wide at the entrance. There is no bar, and a depth of 2 fathoms at low water springs, can be carried in steering S.W. ½ W. for the centre of the entrance. The village of Kikunya, which stands on firm land near the head of a little branch creek, 9 miles from the coast, is the most important in the neighbourhood.

The Kikunya is only connected with the Rufiji by side communications to the Simba uranga, and has not a particle of fresh water in it. In all the branches north of Msala, the water is quite salt, as the amount of fresh water which finds its way into them is so small compared with their vast area, that it produces no effect. Above the junction of the Kiomboni and Simba uranga the river takes a bend to the southward up to the point where the Bumba forks off.

RUFIJI RIVER, indifferently called Lufiji, is most disappointing above the delta. The number and size of its mouths, and the undoubted distance of its source, leads the traveller to expect a much larger stream than he will find. When the inundation caused by the interior rains has subsided, and the current of the river somewhat reduced, so as to allow a boat to ascend, the water channel is limited and obstructed by many shoals and banks, and whenever the river widens with a straight reach it is frequently all more or less shallow.

With the exception of these hindrances, the steam cutter of the *Fawn*, drawing 3 feet, made her way without difficulty for 30 miles to Kisoma, which is 20 miles in a straight line from the Msala mouth, and carried 9 and 10 feet water up all the way, except at one spot rather above Ukema village, where there seems to be no deep channel but a regular shoal of 2 and 3 feet across the river, which would probably be altered by the next inundation. The ordinary depth in the channel was from 2 to 3 fathoms.

At Mpembeno, the river was over 300 yards wide from bank to bank, but the water channel was not over 80 yards. The deep channel was not wide, and in all probability nothing larger than steam launches will ever navigate the Rufiji. Natives at Kisoma reported that higher up, the river was more encumbered with banks, but as they did not profess to navigate it too much confidence cannot be placed in their report. The tide reaches to near the fork of the Kimero ; above this, the current was on an average 1¾ miles an hour. The country is perfectly flat and uninteresting, having very few trees Villages are small and few in number.

At Mpembeno, is the main ferry by which the land route from Kilwa to Dar-es-Salaam crosses the Rufiji. The villages here are rather larger than usual. Grain, roots, and pumpkins grow well here. No dhows go above the delta. The Rufiji tribes owe no allegiance to Zanzibar, and each village is independent.

MAFIA ISLAND, also called Monfia, is the third in point of size and importance of the large islands under the authority of the Sultan of Zanzibar. The island is composed of coral, and is 27 miles in length in a north-east and south-west direction, with an extreme breadth of 9 miles. It is much cut up by mangrove swamps and creeks, but a large part of it is fertile, and cultivated with cocoa-nut trees, manioc, &c. The most considerable village is on the island of Chole, on the south-east side of Mafia, at the entrance to the bay of the same name.

Chole probably contains 2,000 inhabitants, and is locally celebrated for its mats. From the fact of the main trade being carried on here, there seems to be a general inclination of the natives to call the whole island of Mafia by the name of Chole, which leads to some confusion. The other villages, though numerous, are all very small. The shores of the island generally are low, but it has a central rocky plateau of about 100 feet in height, the trees on it making a total elevation of 200 feet, and its outline is devoid of any feature.

The outer or eastern side is all cliffy, and fringed by a narrow coral reef, which is steep-to, and on which the sea breaks furiously. The south and inner shores are bordered with reefs of varying widths, and have many shoals off them. Mafia is opposite to the delta of the Rufiji, from which it is separated by a channel 9 miles wide. This channel though much encumbered by reefs, is nevertheless perfectly navigable by day, and may be of great assistance to a vessel with small steam power on her way south against the south-west monsoon.

Tutia Reef.—This is a detached reef, at the extremity of a long reef running S.W. by W. ½ W. from Kibondo island, from which it is distant 5½ miles, and is the southern danger off Mafia. There is a sand bank on the north-western edge of Tutia reef, which dries 12 feet at springs, and the outer edge of the reef breaks heavily, always showing its position ; a rocky ridge on this edge is as high as the sand cay, but being black is not conspicuous. Tutia is separated by a 4-fathom channel from Kibondo reef, but the passage is too narrow to navigate.

Caution.—It must be borne in mind that the sand bank is on the inner side of Tutia reef, and a good berth should be given in rounding it from seaward, as the current sweeps rapidly up towards it. There are 10 and 12 fathoms water, nearly a mile to the southward of Tutia reef.

Kibondo Island is a flat coral island 1¾ miles in length, lying 3¾ miles from the south shore of Mafia. There is a village on the island, but no water or supplies. A clump of tall trees on the southern end are conspicuous, and some palms on the north-west point also show well.

A broad reef that dries several feet at springs, runs to the S.W by W. from Kibondo island for 4½ miles. The outer edge is steep-to and the sea breaks heavily. There are several islets on the reef, the most distant being 1¼ miles W. by S. from Kibondo.

Anchorage.—There is capital anchorage sheltered from all swell inside the Kibondo reef. A good berth is in 6 fathoms, sand and mud, with the southern islet of Kibondo E. ¾ S., and Tutia sand S. by W.

Juani Island is to the north of Kibondo, on the same reef, and forms the southern shore of Chole bay. It presents to the sea a straight face of cliffs 10 feet high, 4½ miles in length, and which are fringed by a narrow reef. Its inner shore is cliff and mangrove. The channel between Kibondo and Juani is 1½ miles wide, and quite dry at low water.

Chole Island is small, on the same reef, and to the north-west of Juani. It is separated from the latter by a narrow channel, which is dry at low water. Chole lies 4½ cables from the south-east point of Mafia, at the south end of Chole bay, and is the principal place for trade in Mafia. The Arab governor, who is under the authority of the Liwali of Kilwa, resides here, and also numerous Banians and Hindis. It is a difficult place to communicate with, as a vessel cannot get nearer than the anchorage inside Kibondo, 8 miles distant, and the water is so shallow between the anchorage and Chole, that at low water springs, it is not easy even for a light boat to find the passage. Supplies of fresh provisions are scarce.

Chole Bay is a large lagoon-like sheet of water, 4½ miles in diameter, formed by a deep bay in the south-east shore of Mafia island, and nearly blocked to seaward by the islands of Juani, Chole, and Miewi. There is deep water in a limited area of it, but the Kinasi pass, which leads into it from the sea, is so filled with rocks, and the tide in it runs with such extreme velocity, that unless well buoyed, it would be unsafe for a vessel to use.

The channel to the southward is also only fit for boats, though a vessel drawing 10 feet water, could if necessary pass in by it at high water springs, with but little risk. The water is smooth. The shores of Chole bay are well cultivated and populated.

COAST.—From the point opposite Chole island, the south shore of Mafia trends westward in a gentle curve for 8½ miles to the red cliffs of Dongo Jekundu, which are 60 feet high, and conspicuous. All this shore is low and mostly fringed with mangroves, backed by groves of cocoa-nut trees. From the red cliffs the coast turns to the N.W. by N. nearly straight for 2¾ miles to Rás Kisimani. The whole of this shore is bordered by reef and shallow water, which runs off for 3¾ miles to the southward, blocking up the extensive bay formed by the Kibondo reef.

Mange Reef.—This large coral reef, 2 miles in length north and south, uncovers considerably at springs, and a sand head on its northern extremity dries 12 feet. It lies N.W. by N. distant 3¼ miles from Tutia reef, and S. ¾ W. 6 miles from Rás Kisimani. A vessel can pass on either side of the reef, but to the westward is the deepest and clearest channel. Mange reef can always be made out, even when the sand is covered. At low water springs, it will be sighted from abreast Rás Kisimani.

Rás Kisimani, the western point of Mafia island, in lat. 7° 56′ 23″ S., long. 39° 35′ 32″ E., is low and sandy, with a large swamp at the back. It is steep-to, with deep water off it. There is no reef off the point itself, but reef begins immediately to the southward, which dries with a high edge at springs, and can always be seen. Tolerably good water is obtained for the dhows, by digging holes in the sand on the northern side of the point, but it is difficult to obtain any other supplies, though there is a small village.

Boydu Island is opposite Rás Kisimani, and in the centre of the channel between Mafia island and the mainland. It is a narrow sandy island, 1½ miles in length east and west, and covered with tall casuarinas. Its eastern point is 3¼ miles from Rás Kisimani, and its western 4¾ miles from the main land. Boydu island lies on a large reef, which dries for a considerable distance round it.

MAFIA CHANNEL.—Around Boydu island are many small reefs and shallow patches, blocking the centre of Mafia channel for navigation, but leaving a passage on either shore, where vessels can pass. The western channel is marred by a shoal at its southern end, and which is difficult to be seen, and it is besides somewhat tortuous.

The eastern channel, or that by Rás Kisimani, is however straight, with a minimum breadth of half a mile, and depth of 5 fathoms, and the current runs nearly in the line of the channel. The water off, and to the north of the Rufiji delta, is however so thick, that the navigator cannot always depend upon seeing sunken dangers.

Belami is a small reef S.W. by W. ½ W. 1⅔ miles from Rás Kisimani. Its northern part is awash at springs, but there is a one-fathom tail that projects 1½ miles to the southward, which is not easily seen, and forms the western side of the passage.

The left extreme of Rás Kisimani bearing N. 14° E., or Mange sand S. 2° W., will clear the Belami reef. When the red cliffs bear East the reef is abeam.

Maduvi is a sand bank which dries 13 feet, and is generally visible. It is on a reef 2 miles to the north-eastward of the east end of Boydu island, and bears N.W. 2½ miles from Rás Kisimani. A long bank with 2 and 3 fathoms water on it, stretches N. by E. for 3½ miles from Maduvi, and forms the western side of the passage north of Rás Kisimani. This bank is pretty steep-to, and generally shows by a line of discoloured milky water.

Al Hadjiri is a reef 3 miles north of Rás Kisimani, the sand head on its southern end dries 8 feet, and is always visible, covered or not. The western edge of this reef is not steep-to, and should not be approached to close: the passage is on this side. Sefo kept N. ¾ E. clears it. The breadth of the channel here to the edge of the 3-fathom Maduvi bank is 6 cables. There is a wider passage to the eastward of Al Hadjiri, but as it does not give a straight course, the other is preferable.

Sefo is a reef 3 miles north of Al Hadjiri, and has a sand head on the western edge, which dries 12 feet at low water springs, and can always be made out. The breadth of the channel to the west of Sefo, between it and the 3-fathom bank of Maduvi, is half a mile. There is a clear passage 1¾ miles wide between Sefo and Al Hadjiri, that can be used if preferred, and at low water, when all edges of the banks can be seen, it is the best route; but at high water the passage west of Sefo is preferable, as the sand head is on that end of the reef, and one course from abreast Sefo carries a vessel through the whole channel to Mange reef.

Caution.—From a point half a mile west of Sefo sand head, a course South will lead down straight to Mange reef, clear of all dangers; but as there is no leading mark, frequent bearings of the points, &c. should be taken, to ensure that the tide is not sweeping the vessel out of the line, and that she is making good her course.

Tides.—It is high water at Rás Kisimani and throughout Mafia channel, full and change, at 3h. 55m.; springs rise 15 feet, neaps 8 feet, neaps range 3 and sometimes only 2 feet. The direction of the tidal current north of Rás Kisimani is, ebb to the northward and eastward, and flood to the southward. To the south of Rás Kisimani, the ebb runs S.E. and flood N.W. Those tidal streams, however, are frequently overpowered by the permanent northerly current, especially during neaps, when little or no alteration in the current will be found. This depends much on the wind, and if that be strong from the S.E., unless at spring tides, it is nearly certain that a strong northerly current will be found in the Mafia channel, at any time of the tide. From Sefo reef to Mange reef the current is generally in the line of the passage, but a set to the N.E. may be experienced on passing Al Hadjiri reef, when the ebb tide is strong.

COAST.—From Rás Kisimani, the coast of Mafia island trends generally N.E. ¾ E. to Rás Mbisi, distant 10 miles, forming the shallow bay of Tirene. Tirene is a plantation 7 miles from Kisimani, where, under a hill covered with cocoa-nut trees, is a large white house showing conspicuously when the sun is on it.

The land at the back is about 100 feet high, and has two natural objects that will be found useful in ascertaining a vessel's position. One is a hill covered with cocoa-nut trees, which form a conical summit 170 feet high, and is called Palm hill. It is 5¾ miles from Rás Kisimani, and the easiest to identify at a distance, as its conical shape is then more marked. *See* view on chart.

The other is a clump of large mangoes, 175 feet above high water, which show conspicuously against the sky, 3 miles east of Rás Kisimani, and is called Ngombeni. There are one or two other clumps, but this is far the largest.

Banks.—To the north of Rás Kisimani, the sand dries from the shore at springs for 1½ miles in a north-east direction; the low water line then closes into the shore, and at Tirene is half a mile distant, when it again increases at Rás Mbisi to 1½ miles, and where shallow water stretches off a long way. From Rás Kisimani the edge of the 3-fathom bank trends N.E. for 5 miles, where at a point from which Tirene house bears E. by S. ½ S., the bank turns suddenly to the southward, forming a horn with deep water east of it.

Salim Bank is composed of sand and coral, with one fathom water on it, and nearly joins the shore bank at the point above mentioned. It is 3 miles in length N.W. and S.E., and 1¼ miles in breadth. Its northern end is 1¼ miles from the eastern edge of Sefo reef, from which it bears E.S.E. There is a channel between this bank and the shore bank, but no marks can be given for it, and the danger does not show.

Tirene Reef is a small reef awash at low water springs. It lies 2 miles from the shore at Tirene house, which bears from it S.E. by E. It is steep-to on its southern side, but shoals off two-thirds of a mile to the northward, and about one-third of a mile east and west. It partly blocks the entrance to the passage between Salim bank and the shore bank, and is not always seen.

Anchorage.—There is good anchorage off Tirene, in 6 fathoms water, with the house bearing E.S.E. distant 1¼ miles, and Rás Mbisi N.E., where protection is given by the banks. This berth is inside the Tirene reef, to pass eastward of which, the Palm hill should be kept S. ¾ E. This bearing leads to the anchorage, and also westward of another small coral reef, awash at low water, 4 miles N. by E. of Tirene reef.

Rás Mbisi is of coral, backed by trees. To the southward is the entrance to a large mangrove creek. Lechmere hill is an elevation 160 feet high, behind Rás Mbisi.

From Rás Mbisi, the sandy shore trends eastward for 6½ miles to the entrance of Kirongwe creek, another large mangrove entrance.

Rás Murundo is the point at the north side of the entrance to Kirongwe bay, and is of sand, with high trees on it. It bears E. by N. ½ N. 4½ miles from Rás Mbisi.

Off Rás Murundo, a coral reef named Mwamba Mkuu, stretches 2½ miles to the northward, where the edge dries 8 feet at springs.

From Rás Murundo the coast takes a general N.E. ½ E. direction for 12 miles to Moresby point. The shore is mostly sand with points of low coral cliff here and there, and some mangrove creeks; one of the latter, 4½ miles E.N.E. from Rás Murundo, joins Kirongwe creek and has hippopotami in it.

MORESBY POINT or RAS MKUMBI, the north extreme of Mafia island, is of coral, with a low cliff 15 feet high. Small bushes and trees cover the land behind, which is not above 80 feet high. Reefs extend 7 cables northward of Moresby point. and the sea breaks in ordinary weather. A tail of broken ground stretches to the N.N.W. for 10 miles from Moresby point along the edge of the deep water.

In the *Fawn* nothing less than 9 fathoms water, was found on this bank, but it will be well to avoid its northern extremity, where the shoalest water is. The rush of the current over the bank, even in places where there is no less than 20 fathoms, is plainly seen, and makes it appear like a danger.

Anchorage.—There is good clear ground for anchoring, off the north-west side of Mafia, in from 8 to 14 fathoms, sand and mud, at from 1½ to 3 miles from the shore; but only during the south-west monsoon, and not even then when the breeze is strong. A vessel, unless at anchor well in shore, may find a considerable swell rolling round Moresby point. The edge of the reef which borders the shore, varies its distance at this part, from a few hundred yards to a mile, and can be clearly seen at low water but is not steep-to.

There is a violent rush of water at spring tides, in and out of the channels round Barakuni island, but unless within a mile or two of the island it will not be much felt by a vessel at anchor to the eastward. A good berth is in 9 fathoms, sand and mud, with Moresby point N.E. by E. ½ E., and Rás Bueni S.E. by E. This is a convenient position for communicating with the shore. The best landing at low water or half tide, is at Rás Bueni, a little to the southward, where the reef runs close in to the shore.

Supplies.—There are several villages to the south-west of Moresby point, and at Bueni 2½ miles from it. Bullocks, goats, fowls, and a small quantity of yams and pumpkins may be obtained. Guinea fowls are plentiful about here.

Coast.—From Moresby point the eastern coast of Mafia to Chole bay, a distance of 18 miles, is nearly straight, and bordered by a narrow reef which is steep-to.

Barakuni Island.—This is a small sandy island, covered with casuarina trees, 100 feet above high water. It bears N.E. by N. distant 6¼ miles from Rás Mbisi, and W. by S. ¾ S. 10½ miles from Moresby point. It lies on the inner or south-west edge of a reef a mile in diameter. A long shoal extends from Barakuni to the S.W. by W. for 2 miles, leaving a narrow but deep channel between it and the edge of the Mwamba Mkuu. This channel is not recommended as the edge of the Barakuni shoal, which has from one to 3 fathoms water on it, does not show well, and the velocity of the tidal stream is great, and at points sets across the channel.

To the northward of Barakuni island are a collection of sunken reefs, some breaking heavily whilst others do not show, with narrow channels between, stretching up to Niororo island, and practically barring the passage between these islands.

Shungu Mbili.—This island is similar to Barakuni; its highest trees, which are on the western end and show as a flat-topped mass, are also 100 feet above high water, and may be seen in clear weather from a distance of 14 miles. The island bears from Rás Mbisi North, distant 7¼ miles, and from Barakuni N.W. by W. ½ W. 4¼ miles. It is on the southern edge of a large reef, which dries for 1½ miles to the N.E. Shoal water stretches off to the westward or channel side for 1¼ miles, where from the depth of 2 fathoms it suddenly increases to 7 fathoms. There are quantities of pigeons on this island and at Barakuni.

To the southward of Shungu Mbili are several small sunken reefs some of which are just awash at low water. These reefs should all be left to the eastward.

Wumi Reef.—This small reef dries 2 feet, but it is not easily seen at high water, as there is no sand on it. It lies W. by S. ½ S. distant 5½ miles from Shungu Mbili island, and N.E. by N. ¼ N. 5¼ miles from Sefo reef; and should be left to the westward. There is a 2-fathom patch, West a mile from Wumi.

Fili Reef lies N.W. ¼ W. 3 miles from Shungu Mbili island, and N.E. by N. 4¼ miles from Wumi reef. It is of the same character as Wumi but smaller, and should also be left to the westward.

Niororo Island is small and partly bordered by low coral cliff. It is covered with bushes and in 1877 had one conspicuous casuarina on it topping all other trees on the island, and 100 feet high. The island is 5 miles N. by E. of Shungu Mbili, and 13 miles W. by N. ¼ N. from Moresby point, and lies on the western edge of a considerable drying reef, one of a number joined by shallow water stretching eastward of the island for 3½ miles, to the southward 2 miles, and to the northward 1¼ miles, but not much to the westward. The northern spur of the reef is barely awash at low tides, but the sea generally breaks ; a sand cay on its north extreme dries 5 feet at springs. The current deflected by this part of the reef to the north-west often gives the appearance of the shoal extending farther in that direction than it actually does.

This island should be sighted by a vessel coming into the Mafia channel from the northward, and in clear weather it can be seen at a distance of 14 miles, its single tree standing up like a pillar. It is a great resort of turtle in the season, January to June, when natives come from the mainland to turn them.

Anchorage will be found to the westward of the north point, in 8 fathoms, sand.

Banks.—To the northward of Niororo island and as far as Rás Pembamnasi, are a number of banks which can be passed over, with the exception of the three small heads of the Muni patches, (page 298) eastward of Ukamba and the Gordon reef. All these patches can be made out in smooth water by the swirls on them, but the bottom is not generally visible.

Gordon Reef is a sunken danger with only one fathom water on it. It lies N.N.E. ¼ E. 3½ miles from Niororo island, and should be passed to the westward.

Vulture Bank is of considerable extent, with from 4 to 10 fathoms water on it, but there is one head with only 2 fathoms, which lies N.E. ¼ E. 6½ miles from Niororo island. When entering the Mafia channel, no vessel should be as far eastward of Niororo as this danger.

Fawn Bank.—This extensive bank 6½ miles to the northward of Niororo island, is 5¼ miles in length, with from 5 to 17 fathoms on it, and lies across the north entrance of the Mafia channel.

Directions.—Shungu Mbili just open westward of Niororo island S. 9° W. leads over the Fawn bank in 10 fathoms water, to the westward of Gordon reef, and up to a distance of 2 miles from Niororo island, when the course should be altered to the westward to avoid the end of the reef, extending from this latter island.

COAST.—To the north of the Rufiji delta, the shore, mostly sandy beach, which dries off as a mud bank, without coral reef, trends with no important projections to the N.E. by N. for 35 miles, when it curves round Shungu bay eastward to Rás Pembamnasi. The coast is intersected by many small streams, and is dotted with villages, the most important of which are Kavinja, not far north of the entrance of Kikunya; Kivumungao and Yandope, a little farther north; Kisiju, opposite Kwale island; and Bosa, opposite Fanjove island.

Some of the rivers have large mouths, which dhows enter to trade, but all are closed at low tide. The country in this vicinity produces much copal and india-rubber, and near the sea it is all well cultivated and populated. At 6 miles inland the Mtoti hills run parallel to the coast, a flat-topped range averaging 600 feet in height.

Off the coast are several small islands, and outside these again are a number of dangers called the Kwale reefs, most of which only show at low tide, the water being very muddy. These islands and reefs break the ocean swell, and except at places opposite the channels the water is smooth and landing easy all along the shore in ordinary weather.

The water shoals off very gradually all along this coast, but there is a navigable channel for small vessels inside the islands, and the bottom is soft mud. The channel lies generally on the islands side. Dhows invariably use this route.

Tides.—The tides are strong in all the channels, and all along the shore; the flood stream running south and in towards the shore, the ebb to the northward and outwards. Outside the Kwale reefs the current is sometimes continuous to the north, but this is uncertain and depends on the wind.

Koma Island is circular, of coral, and a mile in diameter. The trees on it are 70 feet above high water, and its western point is 5½ miles from the main land, leaving between a broad channel carrying 3 and 4 fathoms water. The island stands on an extensive reef which extends 2 miles to the north-east, having several small bush-covered islets on its outer part, the northern and largest of which is called Pemba-juu.

Supplies.—Bullocks, fowls, and goats are procurable at Koma at a cheap rate, and there is a well of good water easy of access near the western point.

Anchorage.—There is good anchorage in either monsoon to the north of Koma island, in 6 fathoms, mud, with Pemba-juu islet bearing E. by S. distant three-quarters of a mile.

Hatambura Islet.—This is another small rocky wooded islet, 2¾ miles north of Koma, and surrounded by a small reef with 5 and 6 fathoms water close to.

Kwale Island lies north 7½ miles from Koma island, and is of coral, 2½ miles in length east and west, and three-quarters of a mile in breadth. The trees on it are 100 feet above high water. The island is bordered by a large reef, on which, to the eastward and southward, are three bushy islets. The easternmost of these islets, Chokaa, is 40 feet high, the trees on it show darker than those on the other islands, and it is a mile from the east point of Kwale island. The channel inside Kwale island is narrow, and has a maximum depth of 2½ fathoms at low water springs, mud bottom. The *Shearwater*, drawing 14 feet, passed through at low tide, springs, without difficulty, but no water to spare. No supplies can be obtained here though there is a village. The water is unfit for use.

Fanjove Island is sandy, covered with trees 60 feet high, and surrounded by a considerable drying reef. It bears N.E. ¼ N. distant 5 miles from Chokaa islet, and S.S.W. 9 miles from Rás Pembamnasi.

Dira Reef is 3 miles in length, with a sand bank on it 10 feet above low water springs, which generally shows and the sea always breaks. It is 10 miles E.S.E. from Koma island, and 7½ miles N.W. by W. ¼ W. from Niororo island. It is the outermost of the Kwale reefs, and forms the western boundary of the north entrance to Mafia channel.

At 3 miles to the S.W. by W. is the southern of the Kwale reefs.

Five-Fathom Patch.—There is a 5-fathom patch lying E. by N. ½ N. 1¾ miles from the north-east extremity of Dira reef, and there may be less water on it.

Ukamba Reef is 9 miles north of Dira reef, and 6½ miles E.S.E. from Chokaa islet. A sand cay on it dries 10 feet above low water springs, but being of a more reddish tinge than usual, is not so conspicuous. The sea does not always break at high water. Between Ukamba reef and Kwale island, and also inside Dira reef, are several other reefs mostly awash at low water, with navigable channels between them. No further descriptions are necessary for these reefs, as they lie out of the track of ships.

Muni Patches.—To the eastward of Ukamba reef are the Muni patches, three small coral heads with 2 fathoms over them, rising abruptly from deep water. The outermost patch is 4 miles E. by S. from Ukamba reef. The position of these patches will only be known by the tide swirls.

Field Patch is a small 5-fathom head rising from a bank with 15 fathoms on it, and lies 16½ miles North of Niororo island, with Fanjove island bearing W. by N. ¼ N.

Sukuti Reef is the northern and largest of the Kwale reefs. Its north point bears N. by E. ¼ E. distant 6 miles from Fanjove island, and E. ½ S. 4 miles from the entrance of the Bosa river. The reef is of an irregular shape, and 4 miles in diameter. There is one mangrove on its western side, where is also a broken coral head that dries 10 feet at low water. The sea always breaks heavily on the outer edge of Sukuti reef.

Vyumbani are three small reefs awash, which lie S.W. by W. ½ W. 2 miles from the western part of Sukuti reef, and 2½ miles from the main land.

Channels.—There is a clear deep channel between Fanjove island and Sukuti reef, 1½ miles wide. The north side of Dendeni entrance bearing W. ¾ N. leads through. A high clump of trees there usually shows out well.

There is a navigable channel inside Sukuti reef carrying 3 fathoms water. The Vyumbani reefs should be passed close to the westward, but these reefs do not show at all at high water.

Anchorage.—There is good anchorage in either monsoon, in 4 fathoms water, westward of Sukuti reef, with the mangrove bearing S.E. distant 1¾ miles, and the right extreme of Rás Pembamnasi N.E. ¼ E.

Binga Hill is an isolated flat-topped elevation, 530 feet high, rising 8 miles N.W. by W. from Dendeni, and conspicuous from about here.

Shungu Bay is all shallow. The Shungubueni river, which falls into the sea at its southern part, is of considerable size at the mouth, but dries across at low water. A boat can ascend for some hours at high water.

Rás Pembamnasi is the eastern point of Shungu bay. It is low and of mangrove backed by higher trees. The reef dries off it for half a mile, and there is a detached breaking patch two-thirds of a mile from the eastern extreme of Pembamnasi.

Buuni Bay.—Between Rás Pembamnasi and Rás Mwamba Mkuu the coast forms a sandy bay 3 miles across and open to the south-east, a large portion of which is shallow. Some red cliffs a little to the south of the village in the centre of the bay show well with the sun in the east.

A 2-fathom patch, half a mile in extent, lies S.S.W. 2¼ miles from Rás Mwamba Mkuu, and 2 miles from the red cliffs in the centre of the bay.

Rás Mwamba Mkuu is N.E. ½ E. 4 miles from Rás Pembamnasi and is formed of high mangroves. It is bordered by a reef which dries off a mile to the south, and a 3-fathom tail extends to the south-west for another mile.

Anchorage.—During the northerly monsoon there is anchorage in Buuni bay, protected by the long reef running south from Rás Mwamba Mkuu. To enter the bay bring the red cliffs to bear N.W. by N. and steer for them, which will lead between the 2-fathom patch and the reef extending from Rás Mwamba Mkuu, in 5 fathoms water; when the right extreme of Rás Mwamba Mkuu bears N.N.E. ½ E. haul up for it, and when the south end of Rás Mwamba Mkuu reef bears East, anchor in 5½ fathoms, sand and mud. Or if from the southward, steer N.N.W. for the highest trees on Rás Pembamnasi until the right extreme of Rás Mwamb Makuu bears N. 32° E. and then steer for it, which will lead between the 2-fathom patch and the breaking reef of Rás Pembamnasi in 4½ fathoms, when anchor as above.

COAST.—From Rás Mwamba Mkuu the coast trends N. by E. 7 miles to Rás Kanzi; it is at first low and swampy, but for the last 4 miles it rises into cliffs which at Puna point are 80 feet high; here the reef approaches within a few hundred yards with deep water close-to. About Rás Kanzi are a great number of palmyra palms, which form a good distinguishing mark as there are none elsewhere on the coast.

Puna hill is a small isolated rounded hill 240 feet high, rising 3½ miles at the back of Puna point, and is most conspicuous from the southward.

Current.—The current off Mafia island is nearly continuous to the N.N.W., but varies much in velocity from a half to as much as 4 miles an hour, depending principally on the force and direction of the wind in the regions to the southward. The breadth of the current belt also varies much, being sometimes only 30 miles off shore, at other times considerably more. It is therefore very difficult to predict its rate when approaching the coast. A vessel should, however, always steer well to the southward and make Moresby point, when bound for Zanzibar, to insure giving that dangerous Latham island a wide berth.

To the north-west of Morseby point, the western limit of the current at times does not reach beyond midway from Latham island to the main land, at which times even in the southerly monsoon a southerly set may be experienced about Rás Kimbiji, but more generally at this season the current strikes the shore somewhere near Rás Kimbiji and runs along the coast to the northward. On the bank of soundings north-west of Moresby point, the movement of the water is tidal, flood to the south-west, and ebb to the north-east, but varying several points either way.

Winds.—The seasons at Mafia island are similar to those of Zanzibar channel, and like them are very changeable. The wind inside the island is more steady during the day than at Zanzibar. There is more rain about Rás Kisimani than anywhere else in the island of Mafia.

DIRECTIONS for MAFIA CHANNEL.—A vessel bound to the southward inside Mafia island, after passing Rás Kimbiji, should steer so as to pass 8 miles eastward of the Ukamba reef, and sight Niororo island on a S. by W. bearing. The highest trees on Shungu Mbili and Niororo can be seen in clear weather at a distance of 14 miles from the deck and 20 miles from the mast head. Bring Shungu Mbili just open to the westward of Niororo island bearing S. 9° W., and steer for it over the Fawn bank, in 10 fathoms water, until within about 2 miles of Niororo island, when alter course to pass westward of Niororo reef, which can always be seen when near.

From abreast Niororo reef, steer S. by W. ½ W. until Niororo island bears N.E. ¾ N., then keep it on this bearing and steer S.W. ¾ S.; this latter course will lead between Fili and Wumi reefs on the starboard hand and Shungu Mbili island on the port hand, and as far south as Sefo reef, the sand on which should be seen at least 2 miles distant, even if covered. The outline of Mafia island will be well visible when Shungu Mbili island is abeam. When Sefo reef is in sight, steer so as to pass three-quarters of a mile to the north-west of the sand head, which is on the south-western part of the reef; when Sefo bears E.S.E. distant half a mile, the extreme of the bush on Rás Kisimani will bear S. ½ E., then steer South, which course will lead clear of all dangers as far as Mange reef.

If possible, low tide should be chosen by a stranger in using this channel, as at high water the bank north of Maduvi reef is not plainly seen. To the north of Rás Kisimani, there is at times a set to the north-eastward, which must be carefully guarded against. Sefo bearing N. ¾ E. clears the Al Hadjiri reef, and if in doubt, Sefo can be brought on this bearing, when a S. ¾ W. course can be steered until Maduvi reef is abeam, when again steer South.

The channel east of Sefo reef is much wider than that to the west, and can be taken if preferred, but at high water the eastern part of Sefo reef is not clearly seen, and the Salim bank is not seen at all. The eastern extremity of Boydu trees kept bearing S.W. ¾ S. until Sefo bears N. ¾ E. is the only mark that be given. The western passage has the advantage of one straight course from Sefo reef.

When Maduvi reef is abeam, a South course should clear the tail of Belami reef, but either the extreme of Rás Kisimani bearing N. 14° E. or Mange sand S. 2° W. will clear it. When the red cliffs of Dongo Jekundu bear East, the south end of Belami reef will be abeam. Mange sand at low water springs, will be seen from abreast Rás Kisimani, and it can at all times be made out 2 miles off, even when covered, which is only at high tides. Pass westward of Mange reef at the distance of a mile, and when the reef is abeam, steer S.W. by S. until the trees on Simaya island, which are visible at a distance of 14 miles, are seen on the starboard bow.

In proceeding to Kilwa Kivinje, it is better to take the western channel, as it is the clearer and the water smooth, whereas there is often considerable swell in the eastern channel. Pass 1¾ miles to the eastward of Simaya island—using it with the islands of Okuza and Newni, to fix the position of the vessel—and steer S.S.W. ¾ W. until Machangi sand cay is seen, which is similar in height to Mange, *see* pages 284, 291. On this course Membeuso reef is left a mile on the starboard hand, it can generally be seen, and Simaya island bearing N. by E. clears it. Leave Machangi sand on the port hand, and when it comes abeam alter course a point to port until Machangi sand bears N.E. ¾ N. and then steer South.

Chocha reef on the starboard hand is not well seen, the highest part of it being 2 miles to the westward. Poiasi and Pwajuu are steep on their western edges and are easily made out; the course South should lead half a mile clear of them, and also leave Val rock 1½ miles to the eastward. When the high trees on the north end of Songa Songa bear N.E. ½ N., keep them on that bearing astern and steer S.W. ½ S. for the Gingwera tree; the Jewe reef, which is steep-to and generally visible, will soon be seen on the port bow. When the eastern tangent of the Singino hill bears S. ½ W. steer for it, which will lead clear of the Jewe reef to the anchorage off Kilwa Kivinje.

LATHAM ISLAND or FUNGU KISIMBAZI is a low dangerous coral and sand island, in the fairway of vessels approaching Zanzibar channel from the eastward, in lat. 6° 54′ S., long. 39° 55′ 50″ E., and S.E. by S. nearly, 36 miles from Rás Kizimkazi the south extreme of Zanzibar, and East northerly 23 miles from Rás Kimbiji. It was discovered by the East India Company's ship *Latham* in 1758, and is of an oval form 350 yards long north and south, and 180 yards broad. Its surface, 10 feet above high water, is quite flat, apparently made so by the constant treading of myriads of sea fowl that have consolidated the sand collected on the coral substratum into a soft sandstone, which shines very white in the sun, but with a bad light or at night it is difficult to see.

The island is surrounded with a rough coral ledge which dries about three-quarters of a cable all round, and on the north-east side to 1½ cables. The sides of this ledge are tolerably steep, sloping off rapidly to 3 fathoms, the depth of the bank immediately around the island. To the north-east a shoaler tongue extends off a cable.

A sand bank shifts from its northern to the southern end, and *vice versâ*, according to the monsoon, being always at the lee side, and on this it is practicable to effect a landing in moderately calm weather. Two or three vessels have been totally lost on Latham island. To make the island more conspicuous, a beacon, 35 feet high, was erected by the officers of H.M.S. *Shearwater* in 1873, but, as no mortar was used, it was blown down the base only remaining. Cocoa-nuts were planted at the same time, but have not flourished, the birds having destroyed them.

Latham Bank.—A bank surrounds Latham island, extending 4 miles to the north and south, 2 miles east, and half a mile west. These are the distances of the 20-fathoms line of soundings from the island, outside of which the water rapidly deepens to 200 fathoms. The greater part of this area has a depth of from 5 to 10 fathoms on it, and the water is so clear that the bottom can be plainly seen; it is all sand with large lumps of coral scattered about. In moderate weather it is a good place for a vessel to anchor for the night, when too late to get on to Zanzibar, but there is a good deal of cross swell on the bank.

This bank may be run for in safety at night with moderate speed by the lead on any bearing except from the westward, as the soundings on the west side are more abrupt than on the other sides. The *Brisk* ran for the bank by moonlight from the northward, and the bottom was clearly seen when in 10 fathoms. On obtaining soundings anchored in 7 fathoms, distant about 1¾ miles from the island. The bottom is coral and sand, but pretty level.

From the masthead of a vessel at anchor, the high mainland at Rás Kimbiji is just visible on a clear day.

The bank is well adapted for a watch place when cruising, as it lies in the track from Zanzibar southward. There is good fishing on the bank.

Tides and Currents.—The currents on Latham bank are variable, but on either side of it, directly the deep water is gained, it runs with considerable velocity to the north. During the S.W. monsoon about 2 knots an hour may be taken as the average, with 4 knots as a maximum. In the N.E. monsoon about 1½ knots is the average. In November 1869, H.M.S. *Cossack* was set to the northward against a north-east breeze, about 32 miles in 7½ hours. At 5 miles westward of Latham island, the current is much weaker.

It is high water at Latham island, full and change, at 4h. 0m.; springs rise about 10 feet.

RÁS KIMBIJI, a cliffy, but low, promontory on the mainland, jutting to the eastward, is 1½ miles to the northward of Rás Kanzi. Its position will be known by a rounded hill 150 feet high, conspicuous by its isolation, which rises 2 miles within the point. This hill should be the landfall when coming from the southward or eastward and proceeding for Zanzibar, but must not be confounded with another solitary hill to the southward much more conical in appearance.*

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* *See* Admiralty chart:—Rás Kimbiji to Pangani, including the approaches to Zanzibar, with views, No. 640*a*, *b*, in 2 sheets; scale, $m = 0\cdot5$ inch.

Fungu Miza.—The south end of this danger lies 1½ miles from the shore of Kutani cliffs with Rás Kimbiji bearing about S. ½ E.; it is a narrow reef, 2 miles long, extending parallel to the coast. The southern part for three-quarters of a mile is awash, and at the northern end is a rock with one fathom water on it, and 3 fathoms over the centre of the reef between, on which the sea generally breaks. There is 6 fathoms inside the reef.

COAST.—Rás Manamku is a red cliff point 6 miles N. by W. ½ W. of Rás Kimbiji, and 2½ miles farther north is Rás Ndege. The coast is varied by cliffs and white sandy bays, and is higher than any part of the land to the north. At the village of Kutani the cliffs are 70 feet in height, and of a red colour. The 5-fathoms line of soundings is about half a mile from the coast.

Anchorage.—Off the coast from Rás Kimbiji to Rás Ndege the water is deep, the 100-fathoms line of soundings being about 2 miles from the shore, but anchorage can be obtained anywhere, in about 14 fathoms, at a distance of one mile. Care must be taken, however, not to run in too rapidly in seeking a berth, as the depths decrease suddenly from 35 to 15 fathoms, and from that again to shoaler water.

RÁS NDEGE is a cliffy cape, conspicuous when coming either from the northward or southward, and forms the south-west point of the southern entrance of Zanzibar channel. It is abrupt and steep-to, about 30 feet above high water, the cliffs being 10 feet. The point is backed by some low rounded hills.

The position of, and currents off Rás Ndege, make it a difficult point to pass, when working to windward in the S.W. monsoon; but there is good anchorage for dhows or boats a mile westward of the point.

From Rás Ndege the coast trends W. by N. ¾ N. for 5 miles to Rás Koronjo, generally sandy beach, but with one or two small cliffs.

Dhow Harbour is the name given to the anchorage between the reef extending westward from Rás Ndege and another tongue of coral running north from the coast a mile farther west. A good berth in 2 fathoms, will be found with Rás Ndege bearing E. by S. ½ S., and a piece of low cliff on the coast, 1½ miles west of Rás Ndege, W. by S. ½ S. Here in the S.W. monsoon are generally a collection of dhows waiting for a lull to clear the point. The small river Ndege falls into the sea at the head of the bight formed by Rás Ndege, but the sand dries completely across its mouth at low water. This river swarms with hippopotami.

MBOAMAJI HARBOUR is the name given to the anchorage inside Sinda islands. It is fairly protected by the surrounding reefs, but in a strong monsoon, especially the N.E., the swell sets round the islands.

On the beach 1½ miles eastward of Rás Koronjo, is the large village of

Mboamaji. A curve in the coral ledge here forms a good landing place particularly at low tide.

Off Mboamaji village, and a mile from the shore, is a small coral reef awash at low water. Outside this reef, and separated by a channel a third of a mile wide, and 8 fathoms deep, is the Kikwero, a coral reef, three-quarters of a mile N.W. and S.E., half a mile wide, and dries 2 feet in patches at low springs. It is steep-to, with 7 fathoms all round, and the sea always breaks. From its outer edge the north extreme of outer Sinda island bears N.W. ½ W. 1¼ miles.

A small patch, with 3½ fathoms on it, lies in a north-easterly direction from Kikwero reef, distant three-quarters of a mile. From it the north extreme of outer Sinda island is distant 2 miles and in line with the left extreme of inner Makatumbe island bearing W. by N. ¼ N., and Rás Koronjo S.W. by W. ¾ W.

Anchorage.—The best anchorage in the S.W. monsoon is in 10 fathoms water, sand and mud, with the south-west sand point of inner Sinda island bearing S.S.E. ¾ E., and the north point of outer Sinda N.E. by E. ¾ E. There is also fair anchorage off Mjimwema village in 6 fathoms, sand, with the north extreme of Kendwa island bearing N.N.W. ¼ W., Rás Koronjo S.E. by E., and the white house in Mjimwema village W. by S. ¾ S. In the N.E. monsoon the best berth is to the southward of the island in 6 fathoms, sand, with the S.W. sand point bearing N.N.E. ¼ E. distant 2 cables.

The currents at this last anchorage are strong. At the end of the flood, especially in the N.E. monsoon, the stream runs rapidly to the east, and causes a vessel to swing to the swell in a most unpleasant manner.

Directions.—To enter Mboamaji harbour from the eastward, keep the inner Makatumbe island open to the north of the outer Sinda island—to clear Kikwero patch—until the north point of the inner Sinda island is shut in behind the south point of outer Sinda island; then steer to the S.W. so as to leave the southern of the islets stretching off the latter, 3 cables on the starboard hand, and the eye will guide to the anchorage.

To enter from the north and westward of Millard bank, bring the south west point of inner Sinda island to bear S.S.E. ¼ E., and steer for it.

ISLANDS.—A little westward of Rás Ndege commences a chain of islands and reefs, which skirt the coast for about 20 miles or as far as Fungu Yasin. These islands and reefs afford shelter to several anchorages, and lie at an average of 2 miles from the mainland. About midway on the coast is also the land-locked harbour of Dar-es-Salaam.

SINDA ISLANDS, to the north of Rás Koronjo, are two coral islands lying N.E. and S.W. of each other, on a bank a mile in diameter.

The outer island is somewhat the larger being half a mile long N.N.W. and S.S.E., and distinguished by ragged and bare looking trees that dot its outer edge, hanging over the cliffs, and about 50 feet above high water. At the southern end of the outer island is a chain of islets running to the south along the rim of the coral bank. Inner Sinda island is 40 feet high, and has white sand on both north and south points.

Millard Bank, a narrow shoal a mile long, extending north and south, with a depth of 3 fathoms on its shoalest part, lies off outer Sinda island, with a channel 7 fathoms deep between. From the shoalest spot, which is at the north end, the east extreme of outer Sinda island bears S. by E. ¾ E. distant 1¾ miles, the rock off the south end of Kendwa island S.W. by W. 2¾ miles, and Hammond rock W. by N. ½ N. 3½ miles.

To pass to the north of Millard bank, keep Gunja peak (page 313) in line with Rás Kankadya bearing N.W. by W. ½ W. westerly, until nearly abreast Kendwa island. This bank cannot be distinguished until close upon it, when the bottom can be clearly seen.

Rás Koronjo is a cliffy point projecting to the north; there is a small rock 6 feet above high water off it, and the coral ledge dries in a N.W. direction for three-quarters of a mile.

RÁS MJIMWEMA.—Between Rás Koronjo and Rás Mjimwema 3 miles N.W. by W. ½ W., the coast forms a bay. The shore is low and sandy, and backed by mangrove swamps; the large village of Mjimwema stands a little to the south and east of the point of the same name, and as the shore is steeper than usual, there is good protection in the S.W. monsoon, close to the village, for dhows, and small vessels not drawing more than 10 feet.

Rás Mjimwema is a low rounded sandy point distinguished by high cocoanut trees round the villages of Magogoni, Mjimpia, and Mjimwema, and a white house in the first and another in the last, on either side of the point, are conspicuous in some lights. From Mjimwema the coast forms a slight bay westward for 2 miles to Rás Rongoni the rocky east point of Dar-es-Salaam harbour, the red cliffs of which are from 15 to 20 feet high. Magogoni, a large village, stands on the beach a little beyond the former point.

Kendwa island.—Off Rás Mjimwema the coral ledge extends seaBard for a mile, and on its outer edge stands the rocky island of Kendwa, half a mile long north and south. Its trees are 40 feet above high water, and its outline level and uniform.

Between Kendwa island and Makatumbe reefs to the north-west, is a channel half a mile wide, but as it does not carry more than 2 fathoms water throughout its length it is only useful for small craft.

Boats working to windward in the N.E. monsoon should run under the lee of Makatumbe island through this channel, but in the S.W. monsoon, at low tides, the water sometimes breaks right across, and discretion must be used as to taking the channel.

MAKATUMBE GROUP is a collection of two small islands and several islets, standing on a large coral reef off the entrance of Dar-es-Salaam harbour, and protects Dar-es-Salaam bay from the eastward. The inner or south-western island is 2 cables in diameter, and has several high trees in its centre, which make it somewhat remarkable. There is also a white stone house, which is conspicuous when seen clear of the trees. Near this house is a large masonry-faced well, but the water is not fit to drink. In this island most of the stone was quarried with which the town of Dar-es-Salaam was built. The outer island is of the same size, but not so high.

Hammond Rock.—The above islets are spread along the sea face of the reef in a line with Outer Makatumbe island. The northern islet (Hammond rock), 6 feet above high water, is near the north end of the reef, and forms a good guide when rounding this part of it. The reef, which dries at low water springs, is 1¾ miles in extent, its outer face trending N.W. by N. and S.E. by S.; from its north point it takes a S. by W. direction for 1½ miles to the south-west point, on which is the Inner Makatumbe island; here it makes an abrupt angle to the east, forming the south side of the same length. To seaward it is steep-to; off the north point it shoals to the 5-fathoms line of soundings, which is 4 cables to the northward of Hammond rock.

The western edge has also a gradual slope, and on the southern the water is all shoal to the mainland, rendering that passage useless for ships, though good for dhows and boats.

DAPHNE REEFS.—Midway between Makatumbe islands and Kankadya promontory, and lying in the centre of Dar-es-Salaam bay, are three coral shoals called Daphne reefs. The outer and largest is three-quarters of a mile in length N.W. by N. and S.E. by S., and 2 cables in breadth, with an average depth of 2½ fathoms at low water, but a spot near its centre has only 2 fathoms water on it; this shoal part can at times be made out, the sand showing green under the water, but it would not be safe to trust the eye.

The middle reef is rather smaller, and lies half a mile to the S.W., of the outer reef with 2 and 3 fathoms on it.

The inner reef is a smaller patch, 3 cables in diameter, with several rocks with one fathom water on them, which occasionally break. It lies 3 cables inside the middle shoal, from which it is separated by an 8-fathoms channel, and 9 cables from the shore of Kankadya promontory, the right extreme of which bears from the shoalest part N. by W. ½ W., and the north point of Upanga bay S.W.

A boat, working up in the N.E. monsoon, would do well to work up inside this inner reef, and when in its vicinity should tack when Bongoyo island opens off Rás Kankadya. This line just leads clear to the westward, and will prevent any chance of mishap from the occasional breakers.

The south-west extremes of Bongoyo island in line bearing N.W. ½ N. leads north of the outer Daphne reef; or the north point of Rás Kankadya promontory in line with Gunja peak bearing N.W. by W. ½ W. This latter mark also leads northward of Millard bank. The white obelisk within Rás Rongoni kept a little open to the eastward of the end of the red cliffs of that point bearing S.S.W. ½ W. leads eastward of the reef.

DAR-ES-SALAAM BAY is the outer anchorage of Dar-es-Salaam, and is bounded by Kankadya promontory to the north-west and the reef of Makatumbe group on the east. The coast of the bay is broken and indented, and presents to the eye a low outline, nearly uniform in height, but much diversified by alternate sand beaches and cliffs, the latter making in some cases, good landmarks. Inland, at a distance of 12 miles, are mountains of a rounded or flat character, rising to a height of 1,200 to 1,500 feet. This chain extends to the S.W., and falls abruptly on its southern slope.*

Shoal water extends from the shore at the head of the bay to a considerable distance, the 3-fathoms line of soundings being 1½ miles from the beach. At low water, sand banks and coral ledges dry off a distance of 6 cables. The flat between Makatumbe group and the main has an average depth of 9 feet water on it, but on its extreme edge and near the entrance to the harbour channel is a 3-feet rock with 2½ fathoms close-to. From the rock the white house on Inner Makatumbe island bears E. by N. easterly distant half a mile, the west end of Rás Rongoni cliffs S.W. westerly one mile, and Rás Chokir W. ½ S. 1½ miles. It does not generally show.

The centre of the bay as, before stated, is obstructed by the Daphne reefs. During the S.W. monsoon the bay is well protected by Makatumbe reef, but during the N.E. season a considerable swell sets in with a strong wind. Still, for a small vessel, which can lie near Inner Makatumbe island, there is some shelter.

Directions.—Approaching Dar-es-Salaam from the northward, Mbudya island will be first distinguished by its clump of trees. This island should be given a berth of at least 4 miles in order to pass outside Mbudya patches, as it is quite possible that shoaler patches than those marked on the chart may have escaped detection. Steer parallel to the shore at this distance until Makatumbe islands bear S.S.W., observing that Inner Makatumbe has a clump of trees and a white house on it.

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* *See* Admiralty plan:—Dar-es-Salaam bay and adjoining anchorages, with views, No 674; scale, $m = 1 \cdot 5$ inches.

Then steer with Makatumbe islands a little on the port bow, and when Hammond rock is clearly seen, steer to pass about half a mile to the northward of it, unless the leading mark, viz., the white obelisk in line with the west end of Rongoni cliffs, can be made out. In which case keep a little to the eastward of the leading line, which will guide, to the east of Daphne reefs, into the anchorage in the bay. Makatumbe reef always breaks, and can easily be made out, but Daphne reefs are not plainly visible.

In approaching Dar-es-Salaam from the southward, Sinda island will come into view first, and can be distinguished by the ragged trees lining its edge. Give this island a berth of 2 miles to clear Millard bank, or bring Gunja peak in line with Rás Kankadya bearing N.W. by W. ½ W. westerly, and steer on this line; when Kendwa island is nearly abeam, alter course and bring Hammond rock a little on the port bow, and round it at the distance of half a mile.

Anchorage.—The best anchorage in either monsoon for vessels of moderate draught, is in 4 fathoms mud, with the white house on Inner Makatumbe bearing S.E., and Hammond rock N.E. by E. A small vessel can with advantage lie nearer Makatumbe.

Tides and Currents.—The tidal streams in the vicinity of Dar-es-Salaam bay are variable and uncertain. The change of the monsoon works an entire reversal, in most instances, of their directions and forces. As a general rule, the flood runs to the N.W., and the ebb in the contrary direction, but, amongst the islands and reefs, the streams will often be found setting to the opposite points. In the S.W. monsoon, at 6 miles from the land, the current runs continually to the N.W., at rates varying from one to 3 knots an hour. On Mbudya patches, in the N.E. monsoon, the flood runs N.W. and the ebb S.E.; while, at the same time, inside Bongoyo island these directions are reversed.

In Dar-es-Salaam bay it is impossible to give any rule, but the velocities there are not usually great.

DAR-ES-SALAAM HARBOUR is land-locked, the water is of a convenient depth for anchoring, and the shores are steep. There is room for a large number of vessels, and yet not space for any sea to get up, even to interfere with boat traffic. It is the natural locality or the great trading port of the east coast, and was recognised as such by the late Seyd Majid, Sultan of Zanzibar, who commenced to build on a large scale, and intended to direct the Bagamoyo trade hither. His death prevented this project being carried out, and in 1874 the place was all but deserted.*

The harbour is the lower portion of a long salt water inlet that winds inshore for 4 miles, and might be made available for 3 miles as a port.

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* *See* plan of Dar-es-Salaam harbour and view, on sheet No. 674.

The anchorage immediately off the town is in a bay three-quarters of a mile in extent on the northern shore. The shore of the bay is surrounded by land 20 to 30 feet high, generally steep, and, at the town side, ascended by three flights of stone steps. On the west is a shallow mangrove-lined creek. To the south the inlet extends for 2 miles without a turn, a third of a mile in width, and bordered by the same steep banks, but faced by mangroves. The bottom is mud and sand, with an average depth of 5 fathoms. The water is thick and muddy, concealing all shoal places.

The narrow entrance to Dar-es-Salaam harbour is not easy to make out, even from the anchorage in the bay. It lies between the red cliffs of Rás Rongoni and Rás Chokir, through an abrupt break in the coral reef bordering the shore. The break in the reef at the entrance is about 1¾ cables wide which narrows, about a mile within between two low sandy points, to a cable at low water; the points are called respectively East and West Ferry.

On West Ferry point is a solitary baobab tree, used as a leading mark. A little to the right, as seen from outside, a grove of tall cocoa-nuts trees line the beach, and hides the houses of Dar-es-Salaam; more to the right are the huts of the village of Mjimwema,* and the red cliffs of Rás Chokir are conspicuous. The latter are not of large extent, and only 30 feet high, but are of a deep colour, and topped by a cemetery, the white tombs of which show out well.

East Ferry point is a little higher than the other, and has 3 large baobab trees near it, and a few cocoa-nuts; to the left are mangroves, and then the cliffs of Rás Rongoni. These are not so high as those of Rás Chokir, but are much longer, and of about the same colour.

Proceeding in for the harbour, the banks on either side contract the channel, and can generally be made out from aloft. When the turning point of the passage is reached, North sand head (which dries 2 feet at springs) on the starboard hand is usually visible from deck. *See* views on plan No. 674.

A rocky patch projects from the North sand head, to the south-west, into the channel, which presents the greatest difficulty in the passage, narrowing it, at the turning point, to 120 yards. This danger passed, the channel is straight towards East Ferry point, and has a depth of 21 feet throughout, with the exception of a small bank with 16 feet water at low springs, lying in the fairway about 4 cables from East Ferry point; this bank may be passed on either hand, but, until buoyed, it will be difficult for a stranger to avoid. The passage between the Ferry points is on a curve, but it is easy to keep in mid-channel. There is a small patch, with 3 fathoms water on it, off the town.

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* Another village of this name stands on the shore, about 2¼ miles eastward of the entrance of the harbour.

Directions.—To enter Dar-es-Salaam harbour, the time of low water should be chosen, if possible, as then all the reefs plainly show. In no case should a vessel attempt it during the full strength of the flood stream, nor should she leave during a strong ebb.

Bring the western end of Rongoni red cliffs in line with a white obelisk, standing 500 yards inland, bearing S.S.W.* A large mango tree will appear a little to the right, and will be over the white sand at the foot of Rongoni cliffs. Steer in on the above line, which will carry not less than 21 feet at low springs, until the baobab tree on West Ferry point at the inner end of the channel comes in line with the northern end of a clump of cocoa-nuts on a cliff that shows over West Ferry point bearing S.W. by W. ½ W. The vessel will then be about a cable outside the rocky patch which extends to the south-west from North Sand head, and may commence altering course gradually to starboard, carefully rounding the patch until the latter leading mark is again brought in line. Steer in on this line until nearly abreast East Ferry point, and thence keep in mid-channel by eye, taking care to turn sharply to starboard round West Ferry point, as the bank on the port bow extends off Rás Makabe about a cable on all sides.

Tides.—It is high water in Dar-es-Salaam harbour, full and change, at 4h. 20m.; springs rise 14 feet, but neaps range as little as 5 feet. The stream at springs runs very strongly in the harbour channel, especially towards or after low water, as it is then confined to the channel itself. The ebb sets straight over the flats towards Makatumbe islands, so that a vessel on reaching the turning point off Rás Rongoni in her passage out must take care, if obliged to choose that time of tide, that she is not swept on to the shoal water beyond.

Dar-Es-Salaam.—This town, standing above the bank on the north shore of the harbour, was in 1874 only half built, and the houses appear to have been left unfinished. The palace of the Sultan is the westernmost house on the bank, and a flagstaff stands in front. The flagstaff is in lat. 6° 49′ 41″ S., long. 39° 17′ 10″ E. The remainder of the stone buildings, with two exceptions, are roofless, and look more like ruined houses than incompleted ones, on account of the vegetation which climbs around them. There is, however, a considerable population living in the mud huts around these apparent ruins, and the village Mjimwema may be said to be a part of Dar-es-Salaam. There is a governor, with a guard of the Sultan's soldiers, and a custom-house official.

A large tract of land at the back is planted with cocoa-nuts, belonging to the Sultan, and will bring in a considerable revenue in a few years. There is already a little trade with the interior, caravans of ivory occasionally arriving for shipment at Zanzibar. A road is in course of seaward of the island. The inner side is tolerably steep, but the outer side shoals off more slowly, has small outlying patches, and is dangerous to approach too closely. Fishermen occasionally camp on the island.

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* The obelisk can be made out at a considerable distance on a clear day, and the red cliffs show out well against the foliage. C. H. S. Douglas, Nav. Lieut. H.M.S. *Vestal*, 1877.

Mbudya Patches are a number of little banks which lie at various distances outside Mbudya island, the outer one known being 4 miles from the island. They have generally 4 fathoms water on them, but their neighbourhood should be avoided, as it is possible shoaler places may exist.

Pangavini Islet.—A mile to the S.W. of Mbudya island, is Pangavini, a rocky islet on a coral bank, which is three-quarters of a mile in length, north and south. It is a mile from the shore, with a narrow deep channel between.

Three-fathoms Patch.—At three-quarters of a mile north of Pangavini islet, and the same distance west of Mbudya island, is a 3-fathoms patch which forms the western side of the northern entrance to Konduchi harbour.

Fungu Mkadya.—Farther north is a coral reef, 1¼ miles in length, in a N.W. and S.E. direction, drying at low water, named Mkadya. From the depth of 2½ fathoms off its south end, the north-east extreme of Mbudya island bears S.E. by E. ¾ E., distant rather more than a mile. There is a clear channel with 9 and 10 fathoms, more than half a mile wide, between Mbudya island and this reef, but the eye must be the guide.

Anchorage.—There is good anchorage in this channel, under the lee of Mbudya island during the S.W. monsoon, in 11 fathoms, sand, with the small sand spit on the west point of Mbudya island bearing S.E. ¼ E. distant half a mile, and Pangavini islet S. by W.

KONDUCHI HARBOUR.—The village of Konduchi stands on the beach of the mainland, opposite Mbudya island, near the mouth of Peremji river. The coast forms a rounded point, conspicuous from the north, the more so as the trees about Konduchi are higher than others in the neighbourhood. The sand dries off for half a mile.

Konduchi harbour is the name given to the anchorage westward of Mbudya island, and is a convenient shelter during the N.E. monsoon for a vessel wishing to find a quiet place for the night. The best position is in 10 fathoms, sand, midway between Mbudya island and Pangavini islet.

Directions.—Konduchi harbour may be entered either from the north or from the south. The northern channel is narrow for a ship drawing 18 feet, and no good leading marks can be given to clear the 3-fathoms bank; but for a smaller vessel it is only necessary to give the west point of Mbudya island, a sand spit, a berth of 4 cables. The northern edge of Mbudya reef, though not steep, generally shows, and can be cleared by the eye.

To enter from the south,—avoid the banks to the south-eastward of Mbudya island—bring the north point of Bongoyo island to bear W. by N., and steer for it, till within a mile of the island; then alter course, so as to bring Pangavini islet a little on the port bow, and steer to the anchorage midway between Mbudya and Pangavini islands, keeping a good look out for Mbudya reef on the starboard bow.

FUNGU YASIN is a coral reef, 1½ miles in length north and south, and one mile in breadth. It dries over a large area at lowest springs, and has a sand head on its north-west point, always uncovered (4 feet above high water). From this head the trees at Bueni village bear W.N.W. distant 5 miles, and Mbudya island S. by E. 3¾ miles. On the western side the reef is steep-to, but at the south-eastern end shallow water extends off to a 3-fathoms patch, 2 miles S.E. ½ E. from the sand head. Outside and to the S.E. of this patch are a number of little shoals called Mbudya patches already mentioned.

Anchorage.—There is good anchorage inside Fungu Yasin reef during either monsoon, in 16 fathoms, off the centre of the reef, with the sand head bearing N. by E., distant half a mile. The safest approach to the anchorage is round the north end of the reef.

COAST.—From Konduchi village the coast runs to the N.N.W. with some sinuosities for about 16 miles, and then trends more to the westward for 3½ miles farther to Rás Luale. The shore is a low sandy beach, bordered by coral ledges and banks, backed by mangrove swamps or dense bush. A few miles inland are low rounded wooded hills, which in the vicinity of Konduchi rise to the height of 500 feet. From Konduchi village the shore is first a sandy beach and then rocky to Rás Kiromoni, a distance of 2¾ miles; the latter point is low, rocky, projects to the north and forms a small bay on its west side, where there is fair landing in the S.W. monsoon.

At 4½ miles beyond Rás Kiromoni is the village of Bueni conspicuous by some white tombs and large mangoe trees; the coast here projects slightly in a rounded sandy point with a cliff. There are several villages on the beach between Kiromoni and Bueni. Along all this coast the sand or coral dries for nearly half a mile off at low water springs, and there are many outlying dangers.

BUENI REEFS lie off the village of Bueni, and are two in number. The northern one is a bank half a mile in extent, with a rock having a depth of 6 feet on it, from which Bueni village bears S.W. by W. ½ W. distant 1¾ miles, and Fungu Yasin sand head S.E. 4½ miles nearly.

The other, a mile to the S.E., has 2 fathoms on it. These dangers are both difficult to see, as the sea seldom breaks, and the water is thick.

Ukatani Reef, 1½ miles to the S.S.W. of the latter reef, and 1½ miles from the shore of Ukatani village, is small and dries awash.

From it Fungi Yasin sand head bears E. by S., distant about 2½ miles. There is another small patch between this and Rás Kiromoni.

KITAPUMBE REEFS lie off the village of the same name; they are two in number, and of coral.

The south-easternmost, 2½ miles from the land, and 3½ miles to northward of Bueni village, is about a mile in length N.W. and S.E., and dries in one place 2 feet. The northern one is a mile in diameter, 2 miles from the shore, and dries in places 4 feet at low water. From it the right extreme of the land to the northward bears N.W. by W. distant 5 miles. These dangers are both fairly steep-to, and the sea generally but does not always break. The water is thick and discoloured in this vicinity.

MSHINGWI is a small coral reef, on which the sea always breaks when covered, lying off the shore outside the centre of the sand spit forming Mwangotini lagoon. It is more than a mile from the land, and is steep-to, dries 11 feet at low springs, and has 9 fathoms round it. From the reef Rás Luale bears about W. ½ S., distant 2½ miles.

Anchorage.—There is fair anchorage in 9 fathoms, mud, inside Mshingwi reef, particularly in the S.W. monsoon. The shore is steep, and can be approached to a prudent distance. The best side to pass Mshingwi reef, if going to anchor, is to the west.

Mwangotini Lagoon is an inlet, 4 miles long by a mile wide, running in a south-west direction, with its mouth open to the north. It is formed by a long narrow tongue of coral and sand about 1½ cables in breadth, which projects along the coast in a north-westerly direction. This tongue is covered with thick bush, and ends in a low point called Rás Luale, which forms the east point of entrance to the lagoon, and is more than a mile from Rás Mbegani, the western, which is a low mangrove point.

The inlet is mostly dry at low water, but there are two or three narrow channels leading to villages on the banks. Mbegani village stands on the beach a little inside the point of that name. Mwangotini is a large village on a steep bank about midway on the south side. Tall cocoa-nuts trees and white tombs mark its position. The lagoon ends in mangrove swamps.

MBWAKUNI is a reef lying N.E. by E. 6 miles from Bagamoyo, and is directly in the track from Zanzibar anchorage. It is nearly 2 miles long S.E. by E. and N.W. by W., and three-quarters of a mile wide. It all dries at springs, with a steep fall into 9 fathoms at its edge, but there are many coral heads which are visible at half tide, and on the western end is a large sand bank, 11 feet above low water, which consequently nearly always shows, and the sea usually breaks when covered. From this sandhead the French Mission houses at Bagamoyo bear S.W. by W. ⅜ W., distant 6 miles, and the Boribu (page 341), one of the outer dangers off Zanzibar island, E. by N. ¾ N. 5 miles.

Vessels should always pass to the westward of Mbwakuni reef, as the sand head above mentioned can be rounded within 2 cables.

KEBANDAHODI is a large sand and mud bank which lies off the shore at the village of Kaole, and fronts the entrance to Mwangotini lagoon. It never entirely dries, but is nearly awash at low water springs. The outer edge is 3 miles N.N.E. ¾ E. from Kaole red cliffs, and is tolerably steep. The sea generally breaks here, but if it does not, the bank cannot be made out, as the water is thick and muddy. There is no passage inside Kebandahodi bank, except a narrow boat channel with 2 fathoms water, a mile off Rás Mbegani.

From Rás Mbegani, the coast forms a slight sandy bay for 5 miles north-westward to Rás Nunge, a mangrove point which shows well out from the land, and 3 miles from the mouth of Kingani river; the coast along the latter space being a mass of mangroves.

Currents.—The currents off this part of the coast are variable, and depend much on the direction and strength of the monsoon. In the S.W. monsoon the current runs strong to the N.W. past Mbwakuni reef, but inside that reef it is not so strong. In the N.E. monsoon, when the wind is fresh, it is only on the flood that there is any set to the north, but at this season no rule can be depended on.

Kaole, a small village 2 miles south-eastward of Bagamoyo, almost hidden from seaward by trees, stands a little eastward of the conspicuous red cliffs which are about 1½ miles to the south-east of Bagamoyo. The custom-house for Bagamoyo is at Kaole, and the governor, who flies the Sultan's flag on a lofty flagstaff, is the chief in authority on this part of the coast, and superior to the Jemadar stationed in Bagamoyo.

BAGAMOYO.—The town of Bagamoyo stands a few feet above the sea level, on the top of a low but steep bank of a sandy bay. It is the most important town on this part of the coast of Africa for hundreds of miles, but is a collection of wretchedly built dirty huts and hovels, with a few white stone houses belonging to the richer Banians and Arabs. Its population is about 3,000, but as it is the point of departure and arrival for all central African caravans, this number must be frequently doubled and trebled at the seasons when the trade is at its highest. All carrying is done by porters, mostly Wanyamwezi, the tribe inhabiting the Arab settlement of Unyanyembe, 350 miles from the sea coast. These inland negroes are easily distinguished from the Washenzi and other coast men by their long frizzly ringlets of wool, and the ivory amulets which most of them wear.

An Arab governor has a small guard of Baloch soldiers to keep the peace, and enable him to administer justice. The British subjects, the

Banians and Hindis, as might be expected in such a centre of trade, are numerous. There is a bazaar where beads, wire, cloths, and other objects prized by the African negro are sold.

A branch establishment of the Roman Catholic Mission at Zanzibar stands on the north side of the town. There are here two pères, four frères, and six sœurs in charge of some 300 negro children of both sexes. They cultivate a considerable area of ground, and teach practical agriculture and useful trades, such as carpenter's and smith's.

Landing.—At low water, the sand covering a coral ledge, dries nearly a mile from the Bagamoyo shore, on which the dhows are grounded near the beach, and unload when the bank is dry. The best landing with any wind is off the north end of the town, about 100 yards to the right of where the dhows generally lie, and nearly opposite the French Mission. Here, at low water, a coral ridge which runs parallel to the beach, forms, by its abrupt termination in the sand bank under the town, a little cove where the water is generally smoother than elsewhere. At high water, the same ridge, though covered, breaks the swell.

Anchorage.—The water shoals gradually to the shore, and renders it advisable to anchor at some distance from the land, as the swell sets heavily in with either monsoon, and makes a berth in shallow water an uncomfortable one. The best berth is in 4 fathoms, 1¾ miles from the landing-place, with Rás Nunge bearing W. ¼ N., the Arab governor's house S. by W., and the conspicuous red cliffs to southward of the town S. ¾ E.

A berth will also be found with the west extreme of Mbwakuni reef E.N.E., conspicuous tree on Rás Windi N. by W., and the governor's house S.S.W.

Directions.—Kebandahodi bank is the only danger to navigation in the vicinity of Bagamoyo, and vessels have frequently touched on it. The Arab governor's house which is white and conspicuous, near the beach, and visible from 10 to 12 miles on a clear day bearing S.W. ¾ S. leads a mile to the westward of the Mbwakuni reef, and three-quarters of a mile clear of Kebandahodi bank. But should a vessel pass to the east and south of Mbwakuni reef, as the native craft do, and as a native pilot would probably wish, she must preserve a westerly course, and not increase the distance to more than a mile from Mbwakuni, until the Arab governor's house bears southward of S.W. ¾ S.

To cross to Bagamoyo from Zanzibar, proceed out through the Southern pass, and steer to the south-west till the south point of Chumbe island comes in line with Hatajwa hill. This mark will carry a vessel between Tambare and Boribu reefs and to the north of Mbwakuni reef, which should be seen, on a bright day, from the masthead as soon as Boribu reef is passed.

To make the passage in the opposite direction, it is better, especially in the S.W. monsoon when the currents are strong, to steer out from Bagamoyo for Mbwakuni reef until within 1½ miles of it, and then alter course to the eastward, and pass southward both of that reef and of Boribu reef, keeping a good look out for the latter, and giving it a wide berth, having Hatajwa hill bearing a point on the port bow as soon as sighted. But if the weather be clear a vessel may pass to northward of Mbwakuni and Boribu reefs.

Caution.—At times, such as high water, sun ahead of the vessel, calm weather with mirage, shadows of clouds on the water, or such like, it will be dangerous to trust to the eye, and bearings of objects must be resorted to.

KINGANI RIVER.—The Kingani or Ruvu, is the most important river on the coast adjacent to Zanzibar island. Its source and course are somewhat disputed, but there is no doubt that it receives most of the drainage of a large tract of country. It could be made practically useful as a means of transport for about 50 miles, and when the river is moderately high, even more. It has many names, of which Kingani is applied to the lower portion only; 15 miles up it is called the Ruvu, but on the coast the former name is best known. Its mouth is in lat. 6° 23′ S., long. 38° 55′ E., in a bight formed by a gentle curve of the coast to the south-east.

Bar.—Kingani river is fronted by a bar of large extent, which dries 2 miles from the shore, with a semicircular outside edge, and the sea generally breaks heavily; the bar shifts, and is variable in depth. A narrow channel was said to exist in 1874 from the northern side of the mouth by which a dhow could pass over the bar at low water, but it was not discovered by the *Shearwater's* boats.

The best passage in either monsoon is along the southern shore of the entrance, and inside a small mangrove islet off the south point of the mouth. This passage is only available, however, after three-quarters flood, when about 5 feet water will be carried in, the smoothness of the water makes it the most comfortable and safest passage. It is somewhat deeper farther off shore, but innumerable snags render an outside route unsafe.

Along the northern shore is also a good channel to pass the bar when the sea is tolerably smooth, there being fewer obstructions than in the centre. After one hour's ebb a heavily laden boat should not attempt to pass either in or out.

The actual entrance is 6 cables broad from mangrove to mangrove, and 2 fathoms water is obtained immediately inside. At half a mile inside is the ferry of Windi, over which was the old land route of the slave caravans. The river is winding, with a general direction to the S.W. by S., and an average breadth of 100 yards for 12 miles, at which point the mouth is only 5 miles distant in a straight line. Up to this point it runs mostly through dense mangroves, though a few pieces of bare prairie are passed, inundated during rains, but here the open country begins, with a flat grass plain on the right bank which extends back from the river 2 miles to the edge of a low but steep-faced plateau.

In this locality cultivation begins; muhindi (maize), muhogo (manioc), mtama (millet), and viazi (sweet potatoes), are the principal cereals and roots grown, together with cocoa-nuts and plantains. At 19 miles from the entrance (7 miles as the crow flies) is Kingwere ferry, the route by which all trade to Central Africa passes from Bagamoyo. The river is here but 40 yards wide at full. At 2 miles above Kingwere cultivation ceases, and the river flows through forest, but the land is flat, the banks are steep, and about 8 feet high. The stream narrows to 25 yards, and becomes somewhat dangerous with snags and sand-banks. A little farther on, a large feeder, the Kangeni stream, runs into it from the west. At 10 miles above Kingwere the river meets the edge of the plateau before mentioned, and a steep cliff of about 40 feet high forms the right bank. Somewhere between this and Kingwere is the highest point that the tides reach.

The traveller is now in the district of Dunga, of the Wazeramo tribe and for 5 miles the river, turning generally to the S.W. by W., runs at a short distance from the steep edge of the plateau, now touching it, and now sweeping away with bold bends, till the small village of Dunga standing on the hill on the right bank, is reached.

This was the farthest point attained by the *Shearwater's* boats, and is about 35 miles from the entrance by water, but only 15 in a straight line. The river here is about 18 yards wide and 6 feet deep, and the best information obtainable seems to intimate that it maintains this size for many miles.

On the left bank a broad plain stretches to the foot of low undulating hills; and 8 miles from the river, giraffe, zebra, buffalo, hartbeest (a species of antelope), and other large game, are found in abundance, especially in the dry season, when they come to the neighbourhood of the rivers to drink.

The Kingani, like other rivers of this coast, is unhealthy, and is indeed considered unusually so. Fever generally follows any sojourn on its banks, and sleeping in boats seems to afford no immunity.*

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* In the exploration of this stream the writer had a large share. The entrance to the Kingani was somewhat difficult. The banks were generally low, and the adjacent country was a vast plain. The upper reaches were greatly impeded by long grass, sunken timber, and stones. The region continued damp and unhealthy owing to want of natural drainage for a long time after the rains had ceased. His belief was that as a navigable river the Kingani was practically useless.—*Mr. F. Holmwood, British Association, Plymouth, 20th August* 1877.

Coast.—From the mouth of Kingani river to Rás Windi the distance is 9¼ miles. The coast trends N. by E., and upon which are two or three small hamlets known by clumps of cocoa-nut trees, and is a mere strip of sand backed by mangrove swamps. There is a break in the sand 2 miles south of Rás Windi, through which the tide ebbs and flows, and during the rainy season the superfluous water from the inundated plain escapes.

Windi, a village containing about 1,000 inhabitants, stands a little back inside the strip of sand, which hides the huts at low water, and being on very low ground, must be unhealthy. A large baobab tree with some white tombs under it points out from the sea, the position of the village, which is in lat. 6° 15′ 30″ S., long. 38° 54′ 30″ E.

RÁS WINDI is a small projection of sand, and will be known by a large conspicuous solitary tree standing a short distance back from the point. It is fronted at the distance of a mile by a coral ledge, which dries off for some distance with shallow water beyond it, and the sea breaks heavily.

FUNGU MIKO are two smaller reefs: the northern one is a small head of broken heaped-up coral, which dries 8 feet, and from it the conspicuous tree on Rás Windi bears N.W. by W. ½ W. distant 6 miles. The southern reef, half a mile to the S.S.E., is larger, but only dries 6 feet. There are depths of 12 fathoms water close to both these reefs; the sea generally breaks, but not always.

WINDI PATCHES, on which the sea generally breaks, are two flat coral reefs which dry at low water. The southern one is 3½ miles from Rás Windi, and from the patch the conspicuous tree on that point bears W. by N. ¾ N. It is about 3 cables in diameter, dries 6 feet, is steep-to, and has depths of 8 fathoms close to. The northern reef, lying nearly a mile N.E. by N. of the southern, is much smaller, and dries 4 feet, with 12 fathoms round it.

RÁS UTONDWE is 3½ miles N. by E. of Rás Windi. It is a low sandy spit, which projects considerably from the line of coast, and forms a small bay to the north, at the head of which is a large salt water creek having every appearance of a river, and is named Mto Utondwe; the creek, however, ends in mangrove swamps 2½ miles from its mouth, and has no fresh water. It was probably at one time in connexion with the Wami, as the intervening country is one vast mangrove swamp, and entirely inundated during the rains.*

WAMI PATCHES are eight separate coral reefs lying 6 miles to the N.E. by E. of Rás Utondwe. They are very small, varying in depth from 6 feet to awash at low water springs, and occupy a space over 2 miles in a

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* *See* Sheet, No. 640 *b*.

N.W. and S.E. direction, by a mile in breadth. They are steep-to, having depths of 12 fathoms water around them, and dangerous, as the mud from the Wami and other rivers thickens the water at times to such a degree that at high tide they are invisible. The southern extremity of the flat Udoe hill bearing W. ¼ N. will lead to the south of these reefs.

TIDES.—It is high water in the vicinity of the Wami patches, at full and change, at 4h. 15m.; springs rise 15 feet, neaps 10 feet.

MTO WAMI.—The southern mouth of this river is 2 miles from Rás Utondwe, and is called Chunanga; the northern entrance, a mile farther on, is the Purahanya. Both are difficult to make out, the coast being fringed with mangroves, and the rivers taking abrupt turns from the entrances. Of these mouths, the Purahanya is the principal, but both have bars which dry across at springs, and a boat will find difficulty in getting in after half ebb. These bars, like others on the coast, shift and vary with the seasons.

The Chunanga branch, at 3 miles from the entrance, comes to an abrupt termination, and is completely dry at low water; a little below this point, a narrow and tortuous channel, also dry at low water, leads to the principal branch.

The Purahanya branch, inside its bar, is about 80 yards wide, and 12 feet deep at low water, with mangroves on either side. About three-quarters of a mile from the entrance, on the right bank, is a piece of rising ground faced by a red cliff about 6 feet above high water. This is a good spot for camping, being never overflowed as the banks are in general. At 2 miles up, at the fork of the channel leading to the Chunanga branch, the river at low tide is only about 20 yards across from water's edge to water's edge.

Above this it gets rapidly shallow, and snags and sand banks fill the channel; at low water a steam cutter cannot proceed more than a mile above the junction, and at a point 1½ miles farther a whale boat will find it difficult to proceed. Here is another cliff on the left bank. Above this the river was not explored by the boats of the *Shearwater* in consequence of the lowness of the tides arresting further progress in the steam cutter, even at high water; but Captain Malcolm, R.N., who went several miles beyond, states that the river slightly improves and deepens above, and that habitable land is reached at about 7 miles from the mouth, all below being dense mangrove and overflowed lands.*

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* The Wami is stated by Mr. H. M. Stanley to be a fine river at a distance of 100 miles, as the crow flies, from the coast, and suggests that it could be utilized as a passage into the interior, but it is supposed that the river he saw was more probably the Ruvu, and it is doubtful if the Wami can ever be of any practical use in the way he proposes. *See* note relative to Kingani or Ruvu, page 320.

Wami river is full of hippopotami and crocodiles, and large game is said to be plentiful 10 miles from the coast. It seems to be a less deadly river than some others, as several parties from the *Shearwater* slept in their boats on it with no evil effects. Behind the low lands of this part of the coast, a flat range about 800 feet in height, called Udoe hill in the chart, slopes rapidly to the south, and forms the northern limit of a broad valley, down which the Wami probably flows.

The country is inhabited by the tribe of the Wadoe. Off the mouth of the Wami the shoal water extends a long distance from the shore, the 5-fathoms line being 3½ miles off.

Extract from remarks by officers, H.M.S. *Briton*, Feb. 1873 :—The Purahanya mouth is difficult to find; it is recommended to sight the village of Saadani, which is of low mud huts, with one house somewhat higher than the others, close to the beach amongst the trees. The position of the village will be known by a peculiarly shaped hill to the southward of it, with dark trees on the top, which at a distance appears somewhat like a house. Having neared the village in a vessel to a prudent distance—the 5-fathom line of soundings being about 4 miles from the shore—follow the coast southward until the sandy beach ends, the shore is then wooded to the water's edge, in the midst of which is the Purahanya mouth; after passing the Purahanya, by proceeding to the southward along the sandy beach for upwards of a mile, a wooded point is reached, close to which is the Chunanga mouth.

When in the river steer by the eye; the deep water is in the concave bends; 8 to 12 feet can be carried up to the Chunanga junction, above which the river narrows and then widens again. From the junction up to the first village, a distance of 4½ miles, there are irregularities in the depths; below the water is deep, above in the channel there is never less than 4 feet. The tide is felt as far as the junction of the two mouths, and at 1½ miles beyond, the rise and fall was 1½ feet; the stream runs from 2 to 3 knots. The natives report that the river carries the same breadth for about a month's travelling, with 4 feet water, though at times only a foot. The river appears occasionally to overflow its banks to an extent of a rise about 15 feet. It is possible light draught steamers might be able to ascend the river.

COAST.—The coast between Rás Utondwe and Rás Machuisi, a distance of 14 miles, forms a bay about 3 miles deep, and is of the same character, low with a sandy beach, much mangrove about the mouths of the several rivers, and a sand flat drying out for half a mile.

Saadani is a large stockaded village at the head of the bay, 7 miles S.W. by S. of Rás Machuisi. It is the principal place between Pangani and Bagamoyo, but probably does not contain more than 2,000 inhabitants. There is no shelter for the dhows that trade to Saadani, they are simply beached at high water. There are several smaller villages to the northward of Saadani, and many little rivers and swamps open into the sea at this part of the coast.

RÁS MACHUISI is distinguished by a dense grove of trees higher than the surrounding vegetation, which show conspicuous from north or south, the point projects but little. A large village called Buiuni stands on the coast north of it.

Machuisi Reef is about 1¼ miles in extent north and south, and nearly awash at low springs. Its outer part is 2 miles to the eastward of Rás Machuisi, to which it is all but joined at low water, there being only a 3-feet channel between. The 3-fathom coast bank extends a mile outside the edge of the reef.

COAST.—From Rás Machuisi, the coast with slight sinuosities trends in a N.E. by N. direction for 25 miles to the little village of Ushongu. A sandy beach skirts the shore all along and is used as the road connecting the villages which stand near the coast. At low water, coral ledges or sand-flats dry from the shore for half a mile, which is again bordered by shallow water reaching some distance from the coast. The land immediately at the back is low, but at the distance of a mile or two it rises gently to the coast range of from 300 to 500 feet. Behind this again occasional higher land is seen. All is densely wooded. Numerous small streams fall into the sea, but only one of any considerable size.

On the coast between Rás Machuisi and Sange islet are several small villages, amongst which Mkwaja is the most important.

MWAMBA BUIUNI lies 3½ miles from the shore on the 5-fathoms line of soundings. It is of dead coral, dries 8 feet, and is awash about half tide; the higher part looks like sand, but is really broken coral, and shows dirty yellow instead of brilliant white. From the bank Rás Machuisi bears S.W. by W. ½ W. westerly, distant 4½ miles.

BUIUNI MDOGO is a small reef, with one fathom on it at low water, and is steep-to, with 9 fathoms close round it. It lies about 1¾ miles to the N.W. by N. of Mwamba Buiuni and 5 miles from the coast.

MKWAJA PATCHES lie 3 miles northward of Buiuni Mdogo, and 4½ miles S.E. by E. ¼ E. from the shore at Mkwaja village. They are of coral, four in number, small, steep-to, and lie within a diameter of half a mile, in 12 fathoms water. They have an average of 6 feet water on them, and are very dangerous on account of their small size, as the sea rarely breaks, and they are difficult to be seen.

MWAMBA ALEK lies 5 miles S.E. by S. from Sange islet. It is small, with one fathom water on its shoalest part, steep-to, with 20 fathoms close round. It generally shows white, but the sea does not break.

SANGE ISLET is small, rocky, 15 feet above high water, and stands on the coral ledge inside the low water line. It lies one-third of a mile off a slight point 4½ miles southward of the mouth of Kipumbwe river. It is not very conspicuous.

Kipumbwe River, which debouches in a small bight about 4½ miles to the northward of Sange islet, is of a considerable width at the mouth, but rapidly narrows, and though natives state that it is navigable for a few days, it cannot be large. It probably rises in Genda Genda mountain, which is seen up the gorge, through which the river passes the hills. Mangrove swamps line the mouth, and a bar dries completely across at low water. A large village of the same name stands on the northern bank of the entrance, and is the port whence communication is held with the tribe of the Wasaguha, who occupy the country inland. This is a good place for detached boats to obtain fresh provisions.

GENDA GENDA, an isolated mountain, 17 miles inland from Kipumbwe, is conspicuous, and remarkable by its two sharp peaks, the southern one 2,300 feet, and the northern about 1,900 feet in height. This appears to be a volcanic mountain.

KIPUMBWE REEFS.—At a distance of 6½ miles from the coast, and a little southward of the mouth of the Kipumbwe river or in lat. 5° 40′ ½ S. is the beginning of a cluster of reefs which extend north to Funga Datcha, a distance of 7½ miles. Another inner line of reefs, 2½ miles from the coast, runs also parallel to it. These reefs are of various sizes, with deep channels of different widths between them. Some dry a few feet, others never uncover, and all are covered at high water, but the sea on the outer reefs almost invariably breaks.

There is a deep and navigable channel of an average breadth of 2 miles between the two lines of reefs, having smooth water in a strong monsoon, but as no marks can be given, the channel is not recommended For boats beating to the southward against the S.W. monsoon, this channel (the continuation of the one from the north) is invaluable. When Genda Genda mountain is seen up the Kipumbwe valley bearing W.N.W. a boat should make two more short tacks, and then stand over to the Zanzibar coast.

MAZIWI ISLAND is small, sandy, and conspicuous, standing on a large coral reef of a circular form, a mile in diameter. The reef dries 5 feet on its outer edge, where the sea always breaks heavily. The island is in the middle of the western side of the reef; it is covered with tall casuarina trees, and may be seen from a distance of 15 miles. From it Bweni bluff—within the mouth of Pangani—bears N.W. ⅛ N. distant 7 miles, and the nearest coast is 4½ miles nearly. Between Maziwi island and Mwamba Mawe north of it is the best channel into Pangani bay. Maziwi island is the resort of fishermen, but there is no water. Turtle land at the season for laying their eggs.

Anchorage.—There is fair anchorage to the westward of Maziwi island during either monsoon, with more protection than will be found in Pangani bay. The water is rather deep, and care must be taken not to anchor too close, as the reef is very steep. A position in 15 fathoms, sand, with the north edge of the reef bearing N.E. by E. ¾ E., and Maziwi island E. ¾ S., will be found good in the S.W. monsoon. A berth farther south, in 17 fathoms, sand, with Maziwi island bearing N.E. by E. ½ E., is better during the N.E. monsoon.

MWAMBA MAKOME is a narrow coral reef three-quarters of a mile in length, N.E. by N. and S.W. by S. It is awash at low water, and lies about 1¼ miles S.W. by W. ½ W. from Maziwi island. It does not always break, and is the only danger requiring more than ordinary caution in coming in to the south of Maziwi island, as at high water, with the sun ahead, it is difficult to make out.

FUNGU USHONGU.—This reef lies to the south, with a deep channel a third of a mile in breadth between it and Mwamba Makome. It is a mile in length, and half a mile in breadth. The coral dries 2 feet at low water, and on its western edge is a white sand head which only covers at high water springs, and then the sea always breaks. The outer edge of the reef is steep-to.

One mile S. by W. of Fungu Ushongu is a one-fathom bank of small extent.

FUNGU DATCHA.—A mile to the south-east of Fungu Ushongu, and 2½ miles S. by W. from Maziwi island, lies Fungu Datcha, another coral reef, that always shows by breakers when not awash. It is a mile long with a narrow deep channel through the middle of it.

MWAMBA MAWE, lying off Pangani bay, is a coral reef, a few heads of which dry 2 feet at low water springs. It is three-quarters of a mile in length N.E. by N. and S.W. by S., a third of a mile across, and is tolerably steep-to. From its southern end, Bweni bluff bears W. by N. ½ N. distant 6 miles, and Maziwi island S. by W. ½ W. westerly, 3½ miles. It generally breaks at half tide, and the water appears green when it does not.

At half a mile N.N.E. ½ E. from Mwamba Mawe is another small patch, with 2 fathoms on it, called Mawe Mdogo, on which the sea seldom breaks.

At about 1½ miles northward of Mawe Mdogo, and with the north point of Pangani bay bearing about W. ½ S. about 4¾ miles, is the Briton shoal with 4 fathoms water on it, and 25 fathoms near its outer edge, and 7 to 19 fathoms between it and Mawe Mdogo.

COAST.—The shore to the north of the village of Ushongu for 4 miles, is a sandy beach bordered by shallow water for some distance off, and backed by forest, thence rocky with low cliffs for about 2½ miles to Ras Kikokwe, the south point of Pangani bay. At some distance inland are low flat hills, gently sloping to the sea plain.

Outlying Dangers.—Off Pangani bay, and for many miles north and south of it, a broken chain of reefs, with passages, wider or narrower, between them, extends parallel to the land. Those with the coast to the southward have been described.

PANGANI BAY, on the west side of the north entrance of Zanzibar channel, is an indentation in the coast 1¾ miles deep, and 2½ miles wide, but so shallow that only very small vessels can anchor inside the line of the points; nevertheless, the anchorage just outside the bay is fairly protected from heavy seas by the outlying reefs, and Pemba island breaks the ocean swell. Both sides of the bay are rocky, and bordered with coral ledges, backed by cliffs of about 50 feet in height. The head of the bay is a straight sandy beach, which dries out eastward at springs towards the south end three-quarters of a mile.

When the bar prevents access to the ordinary landing place inside the river, there is good landing, particularly in the N.E. monsoon, at the northern end of the beach, under the lee of a rocky point. The best time to land is at high water.

Tides.—It is high water in Pangani bay, full and change, at 4h. 15m.; springs rise 15 feet, and neaps 10 feet.

PANGANI RIVER.—This river, one of the largest on this part of the coast, rises in Kilimanjaro one of the highest of the east coast mountains, rising about 120 miles from the sea. The river is not navigable for any considerable distance on account of the falls, which are about 30 miles from the mouth. Like all African rivers, its depth varies with the season. At 10 miles from the mouth, the steam cutter of H.M.S. *Shearwater*, drawing 3 feet, was unable to advance until the tide rose, and shallows were frequent from that up as far as it is mapped.

The first 4 miles of ascent are through a dense mangrove swamp, which cover the flat between the hills on either side. The river then passes through higher land, and in 6 miles the mangrove swamp is passed, and a beautiful and fertile country is reached. The banks here are all under cultivation, mostly sugar, a considerable quantity of which is made by Arab owners who use hand-mills, worked by slaves, after the manner of a capstan.

The river is full of crocodiles, but the hippopotami are getting scarcer in its lower parts, being driven back by European hunters to the shelter of the upper waters, or to lakes at the side. The natives and Arabs do not seem to attack them, though they do much damage in the cane pieces.

At the entrance, abreast the village of Pangani, the river is about 350 yards wide and 12 to 15 feet deep. The southern side of the entrance is marked by a perpendicular bluff named Bweni, about 200 feet high, and conspicuous from seaward. The northern side of entrance is the flat sandy beach that extends from the head of the bay.

Bar.—The river passes out by Bweni bluff and the rocky point of Muhesa on the south, and the sandy beach—beginning about midway between the two—on the north, which dries at low water. From the point the bar commences and extends seaward for three-quarters of a mile, varying in depth and probably position with the season, its southern limit being the coral ledge of the coast. The average depth on the bar at low water may be said to be 6 feet. On the flood, and with a moderate wind, the water on the bar is usually smooth ; but at the ebb, and especially at springs, it is often dangerous, and many accidents have occurred to boats unwarily crossing at this time. At the time of floods in the interior, the river runs into the sea with great velocity.*

Pangani Village, on the left bank of the river at its entrance, lies very low, and bears a most unenviable reputation for fevers, &c., a fact easy to understand, as the sand on which it stands is but a strip, separating the sea from the extensive mangrove forest that grows up to the doors of the outlying huts. This strip of sand is covered with cocoanut trees. The village is a collection of wretched huts, and may contain 2,000 inhabitants. Another small village stands on the opposite bank of the river, under the bluff before mentioned, and bears the same name, Bweni.

Trade.—There is a good deal of trade here with Zanzibar and Pemba, the dhows loading and unloading inside the river. The produce is brought down the river, principally on rafts made of the Moale palm, which rafts are then broken up, and become articles of commerce. Sugar and hides may be considered the principal exports. The stoppage of the sea slave traffic in 1874 created a land route, of which Pangani village is a stopping-place and market.

Water.—There are wells in the town, but the water is very bad, and boats' crews should avoid using it if possible.

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* Owen.

Anchorage.—The best anchorage off the bar is in 5 fathoms, sand and mud, with Bweni bluff bearing N.W. by W. ¾ W., the north end of the sand beach N.N.W., and the extreme of land to the southward S.W. ¾ S.

Directions.—On approaching Pangani bay, Maziwi island is conspicuous. Inland, the coast ranges show a tolerably uniform elevation of about 200 feet, and behind them again rise the picturesque peaks of the Usambara mountains, many miles inland. An isolated, round, dome-shaped peak called Tongwe, 2,200 feet high, is seen to the southward, and nearer to the coast. This must not be confounded with another solitary mountain still farther south, which has two separate sharp peaks—the southern being the higher and 2,300 feet above the sea—and named Genda Genda. Inland of Pangani bay, a bare yellow patch on the steep face of the flat hill can be seen many miles when the sun shines on it from the eastward, and marks well the position of the bay.

In coming from the southward, steer so as to keep Maziwi island slightly on the port bow; if from the northward on the starboard bow. When Bweni bluff is in line with Tongwe peak bearing N.W. ⅔ W., this mark will lead to the northward of Maziwi island and reef, and to the anchorage off Rás Kikokwe. Should Tongwe peak be obscured (a frequent occurrence), the reef of Maziwi island is so plainly to be seen, that the eye can with safety navigate clear of its steep edge.

For the passage southward of Maziwi island, no marks can be given, but it is safe and easy with the sun in a favourable position.

NOTE.—The description of the coast of the main land is continued at page 360.

CHAPTER IX.

ZANZIBAR TO THE EQUATOR.

VARIATION IN 1878 :—

Zanzibar harbour -	- 10° 30′ W.	Lamo - - -	- 8° 25′ W.
Pemba, Saïd point	- 10° 0′ W.	Port Durnford	- - 6° 50′ W.
Mombaza - -	- 9° 25′ W.	Juba river - -	- 6° 10′ W.
Melinda - -	- 8° 55′ W.		

ZANZIBAR ISLAND,[*] the head quarters of the Arab power on the east coast of Africa, is the largest and most important of the many coralline islands bordering the shore, and is the seat of most of the trade between this coast and the Arabian and Indian ports by sea, as well as that with the central parts of Africa by land. The 6th, parallel of south latitude runs through the island, which is 47 miles long in a north and south direction, and about 20 miles broad at its point of greatest width, which is from the town of Zanzibar on the west side to Chuaka head on the east.[*] The island, 440 feet high, is undulating, the ridges being generally disposed north and south, with flat plains between, which, in several instances, show the same coralline surface, worn into little points and ridges, as may be noticed on any part of the ledge round the island at low tide.

Parts of the island are most fertile; in some places the soil is sandy, but even here all tropical cereals and edible roots grow in extraordinary profusion. In 1872, when a fearful hurricane swept over the island, two of the main products and sources of trade were nearly destroyed; the groves of cloves, of which spice Zanzibar supplied the larger moiety to the English markets, were, with two or three exceptions, entirely levelled ; and it is estimated that four-fifths of the cocoa nut trees that lay in the path of the storm were torn up. As there was an enormous annual export of nuts for the soap and oil trade, besides a large quantity of oil made in the island, the destruction of these trees was nearly as great a check to the prosperity of Zanzibar as that of the cloves. Both will take many years to be restored.

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[*] The information relative to the coast of Zanzibar is from Commander Wharton, H.M. surveying vessel *Shearwater*, 1874.

See Admiralty charts :—Pangani to Rás Kimbiji, including the approaches to Zanzibar, No. 640a, 640b : Zanzibar harbour and its approaches, with views, No. 665 ; scale $m = 1\cdot 5$ inches ; and Sheet 10, No. 664.

Zanzibar island possesses several good harbours on its western side, but that of Unjuga, the principal town of Zanzibar, is the only one frequented by vessels engaged in ocean traffic. The eastern coast of the island is unindented save by the large bight of Chuaka, but this is too shallow to be of any utility.

The island is separated from the mainland by a curved channel that averages 20 miles in width, the shores of the main and the island being generally parallel. The narrowest part of the channel, from Rás Fumba to the shore near Rás Luale, is 16½ miles; and its length from Rás Ndego to Pangani bay about 95 miles.

Coral Ledges and Reefs.—Zanzibar channel is thickly studded on either side with coral reefs, which narrow the available clear passage, at two places, to only 4 miles; but, except in those instances, an average distance of about 12 miles is left between the outlying dangers. On the island side the water is, generally speaking, clear, and the reefs are plainly seen, but towards the mainland there is much discoloration from the mud brought down by the rivers.

Zanzibar island stands on a coral flat the result of many years' action of the waves on the original steep though low cliffs, which doubtless edged the island when it was first raised from the sea by upheaval, and which, at high water, still in most places border it.

This flat, as might therefore be expected, is much broader on the seaward side of the island than on the inner and more protected side. Except at a few spots, and in the inlets, it is very steep-to, dries a foot or two at low water with a rather higher outer edge than its average, but is otherwise very level. All the small reefs of the adjacent channel and coast are of precisely the same character.*

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* Some of these reefs still have islands on them, but a very short inspection of the latter will show that it is simply a question of time as to when they will be reduced to a broken coralline sand head, which is the next stage of demolition, and in which state a majority of the reefs around Zanzibar are now in. The last stage, that of a flat coral reef, completely covered at anything but lowest water, would seem to be the point at which change due to aqueous action ceases; but this is not always reached, as the wash of the water from different points of the flat coral edge tends to prevent the sand from being carried away.

As an instance of change, may be cited Tree island, situated to the S.W. of Zanzibar town on the charts of the commencement of this century. At the time of Captain Owen's visit in 1822 this had disappeared, leaving two white sand heads always visible. In 1874 nothing remained on the reef (locally called Nyange) in the position of the island, though another sand head on its northern or lee point, visible in Owen's time, is, as far as can be determined, in *statu quo*.

There are several curiously isolated rocky hills in Zanzibar island, which show by their water worn and undermined sides, that, during its upheaval, the island was once stationary at a lower level, and that the same water action was taking place.

On the other hand, coral reefs are growing up in many places, but the survey of Captain Owen was too rapidly executed to admit of any comparison of depths.

Exports.—Zanzibar island supplied little else but the articles already mentioned to the commercial world, but as all the trade of the coast accumulates here, there is a considerable export. Ivory is brought in vast quantities from central Africa, and is the most important article of export; copal, the valuable fossilized gum, is dug on the opposite mainland and comes next on the list, hides and orchilla being the two remaining articles of any consideration.

Imports comprise beads, wire, cloth, and hardware, for traffic with the interior; cottons and other material for clothing, and miscellaneous goods. Slaves, the tax on whom was once a source of income to the Sultan, no longer bring any return.

Currency.—All sorts of coins are current, but accounts are generally kept in dollars. The gold coins are principally American. The silver most in use are rupees, valued at half a dollar. Maria Theresa dollars are also in circulation. Indian pice are the only copper coins, and are most useful on the mainland in buying small supplies, &c., as the less civilized natives prefer them to their equivalent in silver, viz., 33 to a half rupee or quarter dollar (called robo).

Government.—The Arab Seyd (Sultan) of Zanzibar claims dominion over the two neighbouring islands of Pemba and Mafia, and over the mainland from cape Delgado to Brava. His authority in the islands and in some of the larger towns on the coast is unquestioned, but in small places on the mainland, at any distance, the authority is lessened, and though there is one district in central Africa to which he sends a governor, viz., Unyanyembe, and the Arab caravans traverse all the intermediate countries, the native tribes a few miles from the coast, even opposite Zanzibar itself, do not recognise the Sultan's authority.

In all the large villages on the coast of the mainland there is a Jemadar, or headman, who represents the legal power in every form; sometimes he is an Arab, but generally a half-breed.

Population.—The Arabs number about 4,000, and own the best part of the cultivated land. Next in importance come the British subjects, the Banians and Hindis (natives of Cutch in India), who have been long established as the main traders of the east coast of Africa, and who do nearly all the shopkeeping in Zanzibar. They are present in every trading place on the coast, and possess most of the money.

In Zanzibar the Banians number nearly 1,000, and the Hindis about 3,000.

The rest of the population of the island is made up of negroes, slave and free, who form the working class. The number of these has always largely varied from the enormous slave traffic that formerly passed through Zanzibar to the north. In 1874 it was roughly estimated at 200,000, of whom perhaps 50,000 are in and around the town itself, the remainder distributed among the plantations and villages of the country.

A few of the aborigines of Zanzibar (the Wahadimu) linger on the east coast near Chuaka, and still claim some slight independence of the Arabs.

Seasons.—The S.W. monsoon sets in about March, bringing the heaviest of the rains; this is called the Masika season. The monsoon blows strong for two months or more, rain being prevalent all the time. By July or August the wind settles down to a steady breeze, and the rain clears off. This lasts till October, when the S.W. wind gets fitful and uncertain, and rain and squalls again may be expected. By the end of November the N.E. wind sets in, sometimes quietly, sometimes with a burst, and, after an interval of a fortnight, blows steadily until February, when it begins to die away. These seasons, however, are so uncertain as to make it difficult to attempt any rule at all, and any such must be understood to be subject to great deviations. Squalls and occasional rainy days may be expected all the year round.

The monsoons near the land do not blow steadily in one direction. In the S.W. season it is usual, especially in Zanzibar channel, for the wind in the morning to be from the west or south-west, freshening up to 10 a.m.; after that its strength diminishes a little, and hauling round to the south, freshens again about 1 p.m.; finishing in the evening at S.E.; when this takes place the weather is usually fine; but if the wind does not commence at west in the morning, and veer to the southward, there is more chance of rain than if it did so.

After the N.E. monsoon is well established, the wind in the morning will be N.N.E. veering to E.N.E., at about 2 p.m.

Hurricanes are unrecorded prior to 1872, but in April of that year one of these scourges swept over the island from the N.E., destroying all in its path. The southern end of the island was, however, untouched.

Temperature and Climate.—July, August, and September, are the coolest months, the thermometer on board ship ranging by day from 77° to 81°, and by night it occasionally falls to 73°. During January, February, and March, the hottest months, the day range is from 83° to 90°, and at night the temperature rarely falls below 80°.

The climate has a bad reputation, but although there is undoubtedly much of a severe and sometimes fatal type of fever, its ordinary virulence and effects have been somewhat exaggerated. Europeans should, if possible, avoid being on shore at night until they are acclimatized, and especially so when they are in the vicinity of rivers.

The worst season for white people is from February to May, but the blacks seem to suffer more in July and August.

Tides and Currents.—The tidal wave coming from the eastward makes the times of high water at full and change nearly identical for all this coast, only varying a little on either side of 4h. 10m. There is a great diversity between the neap and spring ranges, the latter being generally, in Zanzibar channel, 15 feet, and the former 5 feet. This makes a vast difference in the appearance of the reefs and shores of the mainland and island, and especially in the neighbourhood of Zanzibar town, where the united areas of coral banks, covering and uncovering, amount to many square miles. This must be constantly borne in mind when navigating these waters, with or without charts, and it is hardly necessary to add that *low water* should, if possible, be chosen for passing through any passages new to the navigator.

The tidal streams, as a rule, are as follows: the flood runs to the south in the northern part of Zanzibar channel, and in a contrary direction at the southern end, thus meeting at high water at a point near the centre, the position of which depends much upon the wind.

The ebb sets in the reverse way, namely, from the centre to the north and south points of the island.

Outside Zanzibar island, the current always sets to the northward. In the S.W. monsoon its rate varies from 2 to 4 miles an hour; in the N.F. season, from one to 3 miles. This current runs through the passage between Pemba and Zanzibar islands, and up Pemba channel with great velocity. It is a common thing for boats, when beating up in the S.W. season, to start from the south point of Pemba island with a good breeze, stand over to the mainland, and fetch back to the north point of Pemba islands, 40 miles to leeward.

In Zanzibar channel the current is variable.* In the S.W. monsoon, in the clear channel, it runs continually to the north; but amongst the reefs and islands the tidal streams affect it, particularly at springs.

In the N.E. monsoon the tide is more felt, and at springs, in all small channels and harbours, overcomes the northerly set.

In attempting to foresee how a stream will run in any part of Zanzibar channel, the navigator must take into consideration the age of the moon with its resulting strength of tidal stream, the direction and force of the monsoon and the shape of the land, and then judge as best he can what the result will be.

GENERAL DIRECTIONS from the SOUTH.—A vessel from the southward and eastward bound to Zanzibar during the S.W, monsoon should endeavour to make Moresby point, the northern extremity of Mafia island, page 294, in preference to Rás Kizimkazi the southern point of Zanzibar island, in order to make sure of clearing Latham island, and in order that she may, if necessary, heave to with safety. The northerly current, though generally strong, is so variable, that great caution is necessary.

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* H.M.S. *Undaunted*, at midnight on the 8th September 1877, hove to off Ras Kimbiji to allow for drift in the Zanzibar channel, but at daylight the ship was in the same position.

Give Moresby point a berth of at least 3 miles, and alter course to the northward when it bears S. by W. Inside of this line the current is comparatively weak, and the vessel can steer nearly straight for Rás Kimbiji page 309, with the expectation of making not much to northward of her course. The coast about Rás Kimbiji is clear of dangers, and the land is the highest for some miles in the vicinity. To the north of Rás Kimbiji the current again strengthens as Zanzibar channel opens.

In the N.E. monsoon a vessel should be guided by circumstances ; the current is still continuous to the northward, and a sailing vessel had better pass outside Zanzibar island, and enter with a fair wind from the north. A steam vessel could either steer as above, or straight for Rás Kizimkazi.

Rás Kizimkazi, or the land at its back, will be sighted in clear weather at a distance of about 15 miles. There is nothing remarkable in its appearance, which is that of a long, low, wooded hill. Steer so as to keep it on the starboard bow till Pungume island is seen. Rás Kizimkazi should be given a berth of about 4 miles, or the extreme of the point should not be brought eastward of E.N.E. until Pungume island bears N. by W. ¼ W., when a vessel may steer to the N.W. Pungume island bearing N. ½ E. will clear Moore bank, and Hatajwa hill well open to the westward of Pungume island about N. by W. will lead westward of all the Pungume patches.

When this mark is open, steer to pass 1½ miles westward of Pungume and Kwale islands, and follow the directions given at page 342.

RÁS KIZIMKAZI is the southern point of Zanzibar island, but it is impossible to mark its exact position, as it is so rounded that the appearance of the land alters with every position of a vessel ; the south-western portion of the point however, which is generally made by a ship, and where there is a small sandy bay with some tall cocoa-nut trees is conspicuous from some points of view. The point is cliffy, 15 feet high, backed by gently rising ground covered with dense bush, the tops of which may be 100 feet above the sea, and can be seen from the deck of a vessel about 15 miles.

The cliffs are undermined, and landing is impracticable on this part of the coast, from the sandy bay for a distance of 7 miles to the N.E., except at one spot on the south-eastern part of the point, where a gully in the cliff affords an entrance.

The coral ledge dries off Rás Kizimkazi to a distance of three-quarters of a mile, having a steep edge almost like a wall, with 30 fathoms water, a few yards from it. On the extreme southern part of the reef is a sand bank, that dries 5 feet at low springs, and off this the water is not so deep as either to the eastward or westward. On the edge of this coral the swell breaks heavily and always affords a capital guide to the eye, but a ship gains nothing, unless coming from the north, or making for Menai bay, by rounding Rás Kizimkazi closely.

About 4 miles to the eastward of the south part of Rás Kizimkazi is a bank with 7 and 8 fathoms water on it, coral and sand, a mile from the land. It is separated from the coast reef by a channel having a depth of 35 fathoms. The bank is three-quarters of a mile in diameter, and may be used as a temporary anchorage when the monsoons are not strong.

Current.—The current sets round Rás Kizimkazi to the N.W. at all times, but is much stronger at flood time, and especially during the S.W. monsoon, when there is sometimes a perfect race round the coral reef.

COAST.—From Rás Kizimkazi the western coast, which is of alternate cliffs and sandy bay, curves round to the N.N.W. to the entrance of Peete inlet, a distance of 5½ miles It is bordered by a coral bank which dries off from 2 cables to a mile.

Peete Inlet.—This inlet runs in a northerly direction for 6 miles, and is 1¼ miles wide. It is nearly all dry at springs, except a narrow deep channel up its centre. The western side of the inlet is formed by the islands of Wundwi and Uzi. The head of the inlet is lost in mangrove swamps, through which there is a passage for canoes, by some narrow channels to the north of Uzi island into Menai bay on the west.

Rás Bweni, the south point of the little island of Wundwi is rocky, with a small islet lying off it, and is the southern point separating Peete inlet on the east, from Menai bay on the west.

PUNGUME ISLAND.—The south point of this island lies nearly 5 miles W. ¾ S. from Rás Bweni, and 9½ miles W.N.W from Rás Kizimkazi, and will be seen as soon as the latter point is rounded. It forms the western point of entrance to Menai bay, and is the first of the chain of small islands bounding the east side of the channel to Zanzibar. The island is 1½ miles long north and south, and half a mile wide, and stands on the south part of a large coral reef. It is rocky, with cliffs 10 feet in height, and densely covered with trees, the tops of which are about 40 feet above high water. On its eastern side is a white sandy beach, and off which, on the edge of the coral reef, is an islet that is conspicuous from the southward. There are two more islets on the reef to the north of the island; and a sand bank, which only covers at or near high water springs, lies on the northernmost point of the reef, a mile from Pungume island.

A ridge with 4 fathoms water on it, stretches to the north-west from this sand bank and connects it with Kwale the next island to the north. Pungume reef is not steep-to on its western side, and though its edge generally shows by the sea breaking, it should be given a berth of 2 miles.

PUNGUME PATCHES.—To the west of Rás Kizimkazi and south of Pungume island are several banks lying in the fairway of vessels bound to Zanzibar harbour, but only one, Moore bank, forms any impediment to navigation.

Bedford Bank, the southernmost of the Pungume patches, is 2 miles in extent N.E. and S.W., and a mile across, with an average depth of 9 fathoms, and one small shoal of 5 fathoms. The bank is steep-to all round, with a sudden drop from 10 to 20 and 30 fathoms. From the shoalest part, Rás Kizimkazi bears E. by N. ¼ N., and the islet on the east side of Pungume, N. by W. ¾ W. 6½ miles.

Moore Bank, lying about halfway between Bedford bank and Pungume island, is a somewhat smaller shoal, having a depth of 3 fathoms on it at lowest springs. It is likewise steep-to, the depth increasing rapidly from 4 and 5 fathoms to 18 fathoms outside the bank, and 12 fathoms eastward of it. Moore bank lies with the south end of Pungume island bearing N. by W. distant 3 miles, and the extreme of Rás Kizimkazi E. ½ S. southerly.

Another large patch, with 3 fathoms water on it, lies 2½ miles to the E.N.E. of Moore bank.

The Pungume patches do not show till a vessel is close to them, when the bottom will be plainly seen. At high water a large ship would pass over any portion of them, but the ground being uneven, it will be prudent in vessels of heavy draught to avoid them. No good marks can be given to clear the Pungume patches. The vessel's position should be checked by the bearings of Rás Kizimkazi and Pungume island or Hatajwa hill (page 340), and a course steered accordingly. Hatajwa hill bearing N. by W. and open westward of Pungume island or the island bearing eastward of N. ½ E. will clear Moore bank, the westernmost danger; and the extreme of Ras Kizimkazi bearing northward of East will lead southward of it. In a vessel of heavy draught, the 5-fathom Bedford patch should be carefully avoided.

Convenient night anchorage, especially during the N.E. monsoon, will be found on these banks for small vessels.

Tides.—It is high water, full and change, on Pungume patches, at 4h. 10m. For tidal streams, see page 334.

KWALE ISLAND, lying 3 miles to the N.W. of Pungume island, is another low, rocky, scrub covered island, the highest trees of which are about 30 feet above the sea, or rather lower than those of Pungume. It has a small islet lying close to its southern point, and a sand bank which never covers, half a mile N.N.E. of the north-west point, but the latter is not seen until abreast the island. The reef on which Kwale island lies, uncovers at low water springs, and is always visible. On its south-western or channel side it extends off 3½ cables, and is steep-to, but to the south, after drying the same distance off, it deepens gradually to the 4-fathoms ridge which connects it to Pungume island.

The north end of Kwale reef is separated from the coral ledge which dries for 2 miles southward of Rás Fumba, by a narrow channel 6 feet deep which is much used by dhows, and useful for boats working along the shore.

Anchorage.—There is temporary anchorage between Pungume and Kwale islands in 8 fathoms water, with Pungume north islet bearing E. ¼ N., and the north-west point of Kwale island N.N.W.

Kipwa Gini.—A small coral head, called Kipwa Gini, with 1½ fathoms on it, lies W. ¾ N. 1¼ miles nearly from the north-west point of Kwale island. It is not easily seen, and a berth of 1¾ miles should be given to Kwale island to clear the shoal, or Hatajwa hill bearing eastward of N. by E. ½ E.

MENAI BAY is a large sheet of water formed partly by the outlying islands of Pungume and Kwale with their reefs, and partly by a deep indentation in the main island. It is about 12 miles long in a N.N.W. and S.S.E. direction, and on an average 3½ miles wide. The eastern shore of the bay from Rás Bweni is low, with small cliffs and sandy beaches, bordered by a coral ledge which dries off for half a mile. The head of the bay is lost in mangrove swamp, and is divided by a narrow island into two smaller bays called Kiwani and Kumbeni. The river Mwera, one of the largest in Zanzibar island, falls into the bay, or, rather, loses itself in the mangrove swamp. The western side of the head of the bay is formed by the peninsula of Kumbeni, which projects from the base of Hatajwa hill nearly 3¾ miles to the south, and is a flat, well cultivated tract of land of about 40 feet high.

Rás Yeketekambe and Fumba are the southern points of the peninsula; the chain of reefs and islands extending 8 miles to the southward, and terminating with Pungume island, protects the remainder of Menai bay from the westward. Several other rocky islands lie to the E.N.E. of Kwale island, and partly block up the centre of the bay.

Anchorage.—The upper part of Menai bay, the bay proper, is shallow and full of reefs, and is useless as an anchorage, except to vessels drawing less than 10 feet. Good holding ground will be found any where in the outer parts of Menai bay, but, in the strength of the S.W. monsoon, sheltered anchorage can only be obtained to the northward of Pungume island or between Niamembe and Miwi islands; or, for a small vessel, still higher up the bay, off the small islet of Sumi. Here, however, the bay commences to be shallow, and the navigation is somewhat intricate; the eye and chart must therefore be the guide.

COAST.—From Rás Fumba, a low rocky point, the western shore trends N.N.W. for 5 miles to Rás Buyu, another similar point. This coast of the peninsula of Kumbeni is low, and faced by a coral ledge, drying 3 cables from the land.

Mwamba Ukombi.—Ukombi reef lies 1½ miles off Kumbeni peninsula, and extends parallel to the coast for a distance of 4½ miles; it is nearly divided in two, the south-eastern part being the larger, and more than half a mile across. The north-western part is about a quarter of a mile in breadth, and has three small rocky islets on its inner edge. The northern islet, which is 6 cables from the extreme of the reef, is called Ukombi; the other two with a rock are grouped together farther south, are about 10 feet above high water, and named Tali. Ukombi reef barely uncovers at low water, springs, but is easily seen from the masthead, and its steep outer edge is just inside the line joining Kwale and Chumbe islands.

There are shallow patches off both ends of the reef.

Inner Pass.—To the northward of Kwale island is a passage through the reefs leading in towards Nguruwe (a small islet 25 feet high south off Rás Fumba), and then running parallel to Kumbeni peninsula, inside Ukombi reefs. The water is deep, and this passage and that between Chumbe and Ukombi reefs are much used by dhows and regular traders to avoid currents; but as they can only be navigated by the eye, assisted by the chart, no directions can be given. The gain to a large vessel by proceeding through these passages would be small.

ARIADNE BANK.—This danger is a small bank with 2¾ fathoms water on it, steep to, and in the way of vessels bound in or out of the southern pass of Zanzibar. The bank, can however, be seen from aloft, and the channel between it and the southern part of Chumbe reef is 2½ miles wide. It lies with the south end of Chumbe island bearing N. by E. ½ E. distant 3½ miles, and Hatajwa hill N.E. by E. ½ E. nearly.

To pass eastward of the bank, the outer houses of Zanzibar town should be kept well open eastward of Chumbe island, the latter bearing N. ½ E. To pass westward of the bank, keep the west extreme of Chumbe island bearing eastward of N.N.E. with the outer houses of Zanzibar town well open west of the island. In standing towards the bank from the westward Mbweni house (English mission) should not be brought open eastward of the south end of Chumbe island. Hatajwa hill, open north of the Tali islets, bearing E.N.E. leads northward of the bank; and the hill open south of the islets N.E. by E. leads southward of the bank.

With the sun to the south, and clear weather, the town shows white and conspicuous; under other conditions, it is not easy for a stranger to make out, when a vessel's position must be checked by the bearings.

HATAJWA, a conspicuous, isolated, rounded hill, 206 feet high, stands on the flat ground of the main island, on Kumbeni peninsula, about a mile from the shore, abreast Ukombi islands. It is a mass of coralline rock rising from the level plain around, and the deeply cave worn sides and base give unmistakeable evidence of its having once stood as a solitary islet in the sea, undermined by the waves. There are other isolated hills in Zanzibar island, of the same character.

CHUMBE ISLAND is similar to Kwale island, half a mile long north and south, with overhanging low cliffs, and covered with trees 45 feet above the sea, or rather higher than those on Kwale island; there are two small islets off its south end. Chumbe island lies about N.W. ½ N. 8¼ miles from Kwale island.

Mwamba Chumbe, on which the island stands, is a large reef, steep-to, and discernible from aloft, though covered at all times except at low water springs. It extends more than 1¾ miles in a south-easterly direction from the island, but on the western side not more than a cable off. A narrow sandy patch generally visible, lies on the eastern part of the bank about a mile from the island.

The COAST from Rás Buyu to Rás Shangani, on the latter of which stands the town of Zanzibar, is generally cliffy and broken with white sandy bays. Between Rás Chugwani and Rás Mbweni it is low, then red cliffs, followed by white cliffs, from 50 to 70 feet high, to within a mile of Zanzibar town. The red cliffs near Rás Buyu are the most extensive and the highest, but they are not generally so conspicuous as those at Rás Mbweni, which, from their brighter colour, usually catch the eye first, the more so as a tall white house stands on them, forming another conspicuous object and distinguishing these cliffs. With a morning sun, however, it is difficult to make out any feature on this coast. The ground rises at the back and is covered with trees.

Reefs.—From Chumbe island northward—fronting the town of Zanzibar—as far as the parallel of 6° S., and stretching 10 miles from the Zanzibar coast, are a mass of reefs all covered at high water springs, dry more or less at low water, and mostly visible at all times of tide.

Boribu Reef is the south-western of these dangers; it is more than three-quarters of a mile in length, and its north-west end lies 2 miles S. by W. ½ W. of Tambare reef, and is similar in shape and direction, but somewhat smaller. On its northern point there is a small white sand head, which is only covered at high water.

Tambare Reef.—To the north of Boribu reef, and 2½ miles south of the sand head on Pwakuu reef, is Tambare, an isolated coral reef, a mile in length N.N.W. and S.S.E. and half a mile in breadth. It is steep-to, always to be seen, and a sand head which is on its northern extremity is only covered at high water.

Outer Tambare, lying W. by N. 1½ miles from Tambare sand head, is a small coral shoal, with 1½ fathoms on it at low water. It is always discernible.

Pwakuu Reef.—At 1¾ miles to the north-east of Tambare sand head, westward of Nyange reef, and south of Mapape reefs, is the extensive reef called Pwakuu or the Great shoal. It is nearly 3 miles in length N.W. and S.E., and 1½ miles in breadth. A large sand bank on its western part is only covered at high water, and the reef dries at different times of tide. A navigable channel 2 cables wide, but which is never used, separates Pwakuu from Nyange reef.

Nyange Reef.—This extensive coral reef is 3 miles in length N.E. and S.W. and 1½ miles in breadth, and steep-to on its southern and eastern sides. A sand head that dries 11 feet on the north extremity of the reef, is generally to be seen; the remainder of the reef is awash at low water springs.

The southern passage into Zanzibar harbour lies to the southward of Nyange reef, which will be sighted on passing Chumbe island.

Mtwana is a double-headed shoal lying off the Zanzibar shore, 1¾ miles westward of Rás Chugwani. The western head has 2¼ fathoms on it, and is marked by a mooring buoy, which lies in 6 fathoms, a cable outside the shoalest spot. Mtwana shoal is not easily seen, even at low water.

Kisiki Bank, a mile northward of Mtwana shoal, and 1$\frac{4}{10}$ of a mile westward of Rás Mbweni, is a small coral bank just awash at low springs, but a sand on it dries 3 feet, and shows so white that the bank is always to be seen at any time of tide. Its eastern edge is marked by a nun buoy in 4 fathoms, close to the sand head, which may be passed close to. A shoal tongue runs south from Kisiki bank, narrowing the available channel for large vessels at low water to about half a mile. There is a depth of 20 feet on the tongue, 5 cables S. by W. of the sand head of Kisiki bank.

Buoys.—The position of the buoys on Mtwana and Kisiki banks should not be too implicitly relied on, as they are liable to shift.

SOUTHERN PASS.—The Southern pass is first between Nyange reef on the north-west, and Chumbe island to the south-east; and then between Kisiki and Mtwana banks; the least depth of water in the fairway channel between the latter banks is 5½ fathoms.

Directions.—To proceed through the Southern pass; having arrived abreast Pungume island and intending to pass eastward of Ariadne bank, bring Hatajwa hill to bear eastward of N. by E. ½ E. to avoid Kipwa Gini (page 338), and steer to the N.N.W. so as to pass about half a mile westward of Chumbe island. The outer houses of the town of Zanzibar should be kept well open eastward of Chumbe island or the south end of the island bearing N. ½ E., until Hatajwa hill bears E.N.E. and open northward of Tali islets, to clear Ariadne bank. To pass westward of the bank the west extreme of Chumbe island should bear eastward of N.N.E. with the outer houses of the town of Zanzibar well open west of the island.

From abreast Chumbe island steer northward and bring Masingini, a conspicuous square white tall house with a dark high-pitched roof, standing on the highest summit of the ridge to the north of Zanzibar town, in line with a white pillar on the white cliffs to the south of the English Kiungani mission house, bearing N.E., which will lead through the middle of the deep channel in 5½ fathoms water. The mission is a white three-storied square house on the low sea cliffs, 1½ miles south of the town (*see* view C. on chart No. 665).

When Rás Buyu and Rás Fumba are in line about S.S.E. ¾ E., the vessel will be in deep water, and may steer for Rás Shangani rounding it at a convenient distance for the anchorage to the northward of the fort. Rás Buyu is a low point to the south of some high red cliffs on the coast of Zanzibar. Rás Fumba lies to the south-east of Rás Buyu.

Caution.—As accidents have occurred to vessels proceeding through the passes for Zanzibar harbour at night, it is recommended unless in cases of necessity to seek a safe anchorage outside until daylight. If compelled to go in, boats with lights should be sent ahead to mark the channel.

Anchorage.—The anchorage at Zanzibar is good anywhere off the town. Vessels of war generally lie in about 8 fathoms water, mud, to the north of the English Consulate, a large square house on the extreme point. During the S.W. monsoon the smell of the town is most offensive and unhealthy if the vessel be too close in, and a berth a little off shore is to be preferred.

During the N.E. monsoon the landing is sometimes very bad on the north shore of the town, and boats have to go to leeward. In this season it is better to anchor more to the west of Shangani point, that boats may land on either side; but if coaling from the shore, a vessel should anchor as far to the eastward as practicable, in order to obtain the coal quickly and dry.

Pange is a coral reef, with a large sand bank on it, which generally shows, and dries 13 feet at low water springs; this part lies 1½ miles N.N.W. ¼ W. of Kisiki bank. Pange reef is nearly joined to Kisiki bank by a shallow ridge, leaving a deep channel between, but which is so narrow that it is useless as a pass.

Fungu Chawamba.—This reef is a mile to the northward of Pange reef, and only uncovers at the lowest tides. It is steep-to, and always to be seen.

Two-Fathoms Banks.—About 4 cables to the north of Fungu Chawamba, is the nearest of two small banks, with 2 fathoms water on them, lying close together, and north and south of each other.

Murogo is a large reef about 1½ miles in length north and south, to the west of Pange and Fungu Chawamba. A wide deep channel separates the former from the two latter banks, and can be navigated by the eye with safety, all the reefs being steep-to. A large sand bank on Murogo reef generally shows, and dries 9 feet at low water.

Bawi is a low island covered with cocoa-nut trees, which with its reefs forms the western protection to Zanzibar anchorage. It lies 3 miles W.N.W. of the town on a large reef which extends to the S.W. more than a mile, and dries at low water, with several sand patches on it. To the north of the island a one-fathom ridge connects a patch called Mwamba Bawi, which dries at half tide, and its south end is three-quarters of a mile in a N. by W. direction from Bawi island.

Fungu Mapape and Mwamba Mapape are two reefs lying about 1½ miles west of Murogo reef, with a clear channel between them and Murogo. They lie north and south of one another, and are dry at half tide, with white sand heads. Together they are 2 miles in length, with a 4-fathom channel between them.

WESTERN PASS.—The Western pass into the anchorage of Zanzibar, is between the reef of Bawi island on the north, and Fungu Mapape and Murogo reef on the south; and then between Fungu Chawamba bank and the 2-fathoms patches north of it.

Directions.—Steer in midway between Bawi reef on the north-east and Fungu Mapape to the south-west, and bring Walleso house in line with the gaol bearing E. ¼ S. (*see* view B. on chart No. 665), which leads between Fungu Chawamba and the Two-fathoms banks north of it. Walleso is a white house on the hill above the town, and is half hidden by trees, The gaol is a square yellow house on the extremity of Shangani point, and is the next building to the south of the consulate.

It is only when the sun is to the west that the leading mark can be seen. but this channel can be navigated by the eye if the sun be astern of the vessel.

ZANZIBAR TOWN, named Unguja by the natives, is principally built on low land which projects slightly from the island to the west, and terminates in a rounded sandy point called Shangani. Hence it is conspicuous when entering from either north or south, as the houses are all of a dazzling white colour, and can be seen from a position 5 or 6 miles south of Chumbe island, and 10 miles to the north of Chapani island. The larger houses are built on the shore facing the north; and the Sultan's palace, a tall square edifice, is conspicuous in the centre of the line, and has the Sultan's flag—red—flying on a staff in front of it.

West of the palace, the low towers of the old fort are seen over a casemated water battery of 32 pounders, and on either side are the houses of the consuls and European merchants, the large square building on Shangani point being the English political agency and consulate-general (formerly the Central African mission house). The town is, from this view, rather imposing, but these respectable buildings do but form a façade to the meaner habitations that compose the bulk of the town. The southern face of Shangani point presents a collection of wretched mud huts, and the interior of the town is a maze of narrow and tortuous lanes, filthy beyond description, running between mud huts and dilapidated coral built houses.

To the south and east is a salt water inlet or lagoon, dry at low water, but which at high tide nearly converts the town into an island, and is only cut off from the sea to the S.W. by a low coral and sand ridge which extends from Shangani point to the south along the sea shore. The lagoon is crossed by a stone bridge which connects the main town with its suburb on the eastern side. This quarter is, if possible, more foul and inodorous than the other, having the fish market in it. The entrance to the lagoon is a mile to the north-eastward of Shangani point. At this entrance and in the lower part of the lagoon all the old dhows, and dhows intending to make a long stay at Zanzibar are laid up.

There are a few Portuguese shops for European goods, but the stalls in the native bazaars are mostly kept by Banians and Hindis, who do nearly the whole trade of the town.

Position.—The position of the British Consulate, Zanzibar, is lat. 6° 9′ 43″ S., long. 39° 11′ 11″ E.*

Missions.—Zanzibar is the head-quarters of the English central African mission, which has establishments for young negroes of both sexes to the southward of the town, and in 1874 was building a church on the site of the old slave market, to be followed by school houses. A branch of this mission is established on the mainland to the north of Pangani.

There is also a Roman Catholic mission, presided over by French priests. They have a large blacksmith shop with a few hand machines in it and had, before the arrival of H.M.S. *London*, undertaken repairs for Her Majesty's ships. There is a branch of this mission at Bagamoyo, on the mainland opposite.

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* See advertisement.

The mail packet leaves Table bay every month, calling at port Natal, Delagoa bay, Inhambane, Quilimane, Mozambique, Zanzibar, and Aden, and *vice versâ*. The exact date of the arrival and departure of the steam vessels varies according to the monsoon.

Water and Supplies.—There are some large tanks of pure rain water at Shangani point. Water from the town should not be used, the wells being impregnated with the drainage of the houses.

Fresh provisions are tolerably plentiful, but fowls and eggs are of inferior quality. beef is tolerable, there is a little inferior mutton, and goat's meat can always be procured. Fruit plentiful in its season, and the oranges and mangoes are particularly fine. There is an ample supply of all tropical vegetables. Fish abound, and some kinds are very good.

Coals may be taken on board at the rate of 260 tons a day by means of native boats.

Supplies for H.M. Ships.—Provisions, and naval stores of every description, are kept on board H.M.S. *London*, the stationary ship at the port. She is also fitted as a hospital, a receiving ship, and a factory, and has a condensing apparatus on board with a large number of tanks for the ready supply of cruisers.

The *London* is moored with the English consulate (formerly mission house), bearing S. 73° E.; Chango island, east extreme, North; Tree on Chapani island, N. 38° E.

Tides.—It is high water in Zanzibar harbour, full and change, at 4h. 15m. Springs rise 15 feet (and occasionally 16 feet), and neaps 10 feet. The direction of the streams is very variable at the anchorage, as the tides meet about this part. In the S.W. monsoon off Shangani point the stream runs mostly to the north at all times of tide, but a vessel anchored under the lee of the point will be in the eddy, and will swing in all directions. During the season of the N.E. monsoon the currents are not strong.

Off Bawi island and through the Great pass the direction of the current is always north in the S.W. monsoon.

DIRECTIONS for leaving ZANZIBAR.—In either monsoon it will generally be better for a sailing vessel to make a fair wind of it, and leave Zanzibar by the lee pass. If bound southward in the S.W. monsoon this may appear to put a vessel a long way to leeward, but probably nothing will be lost by it, for to work to the southward, an offing of 90 miles must be gained in order to be outside the main current, which runs strong along the land, and the offing will be gained sooner by going north.

A sailing vessel must leave Zanzibar anchorage in the morning to make certain of anchoring off Rás Nungwe for the night, page 353; and should weigh with the first of the S.W. or land breeze in the morning, and stand out to cross the strength of the current as soon as possible. In vessels under steam a liberal allowance must be made for the current which sets about N.N.W. into the Pemba channel. Any attempt in a sailing vessel to start with the afternoon sea breeze will result in the vessel being swept up Pemba channel, and if the morning wind be light, the same thing may occur. There are no means of avoiding this drawback, and many vessels are set far north of Pemba before getting outside the current.

If going north in this season, steer inside Pemba island, during daylight, if possible. A simple way during the S.W. monsoon is to go through the Pemba channel, during daylight, and even if bound to the southward, a vessel will not lose more by this course than by trying to beat out to windward of Pemba. If the South pass be tried, leave either early or late, and anchor off Chumbe island until the wind veers.

During the N.E. monsoon a sailing vessel bound northward might lay along the land to the north of the town by starting at 2 p.m., but she would have to anchor that night, and wait until the same hour next day, unless the morning were favourable for short tacks between Shearwater patches and Tumbatu island. Altogether a vessel would probably gain by running south, and round Rás Kizimkazi, the south point of Zanzibar, and getting into the fair current outside.

Anchorage may be obtained anywhere in Zanzibar channel in 25 fathoms or less, on an emergency, if overtaken by night or thick weather, except near the entrances.

COAST.—To the north of Zanzibar inlet or lagoon the coast is low and sandy, and trends northward to Mtoni, a small village, with a large palace in ruins standing on the beach. This palace is used as a leading mark, but it is not so conspicuous as other white buildings on the shore; its position being next to the north of a house with a box like projection from its roof is the best way to identify it. Here an aqueduct, ending on the sea beach, conveys good water from a spring called Chim Chim, about a mile back from the coast. This aqueduct is however open, and as numerous negroes are generally washing either themselves or their clothes in it, the water is unfit for drinking purposes.

From Mtoni the coast to the north forms a slight bay to a low rocky point called Bet-el Rás, on which stands a large long white house, castellated, with a lofty portico on its northern face. The land rises at the back of this part of the coast to a range of hills 440 feet high, which extend parallel to the shore at a distance of 1½ miles, and is the highest land in Zanzibar island. This hill is crowned by a tall white house with dark high-pitched roof, called Masingini.

The northern boundary of Zanzibar anchorage is formed by three islands with their reefs, which extend in a W.N.W. direction from Mtoni, from which the nearest island, Chapani, is one mile distant.

CHAPANI is a low scrub-covered island, a third of a mile in length N.W. and S.E. Unlike most others in this vicinity, the reef on which Chapani stands shoals gradually off in every direction, and has a number of small heads which crop up on the outer edge of the bank. Chapani island is used as a cemetery by the European community and by vessels visiting the port from the northward. This island is not easy to make out, as it appears against the higher land of the main island.

Kebandiko is a small island to the north-westward of, and on the same reef as Chapani island, the coral drying between them.

ENGLISH PASS, the entrance to Zanzibar harbour generally used by vessels approaching from the north, is the name given to the narrow curved channel to the east of Chapani island, between the latter and the shallow water bordering the shore of Zanzibar. Though the east end of the island is more than a mile from shore, the available channel is narrowed to a quarter of a mile wide by the shoals extending from both island and main.

The pass may be said to begin about three-quarters of a mile to the N.E. of Chapani island, where the bank surrounding the island terminates in a 3-fathoms head, near which is the line of the leading mark.

Buoys.—The eastern end of Chapani reef terminates three-quarters of a mile eastward of the island, by a steep fall from 2 to 8 fathoms water. This edge is marked by two buoys near each other, which can be rounded closely if in their proper positions, but as they are not securely moored nor well looked after, too much confidence should not be placed in them. The edge of the coast bank extends 1½ cables off the Mtoni shore.

Directions.—To enter the English pass from the northward, and being a long half mile from the shore, and in not less than 6 fathoms water, steer along the coast until the palace—in ruins and not very conspicuous—of Mtoni is in line with Walleso house, on the west end of the hills at the back of the town, bearing S.S.E. easterly, which mark leads to the middle of the pass; when the north sides of Chapani and Chango island are in line, alter course to the south-west and keep a white stone pillar on the beach in line with Kidichi—a square low dull looking house, which stands on the northern end of the hills to the eastward—bearing N.E. ½ E., which mark will lead clear of Chapani reef, when a vessel may steer for the anchorage at Zanzibar as convenient.

If the leading marks for entering the English pass cannot be made out from the northward, and the vessel is under steam or sail with a commanding breeze, keep the Zanzibar shore on board as close as prudence will admit until the marks are seen. *See* caution, page 342.

CHANGO is a low island a little more than three-quarters of a mile in length, and lying three-quarters of a mile W.N.W. of Kebandiko. Shallow water extends southward which terminates in a knoll with 2 fathoms water on it, at 1¾ miles S. by W. from the island. To the north, rocky ground extends more than three-quarters of a mile in that direction with a rock awash near its termination; hence a tongue with 3½ fathoms projects westward, elsewhere the bank does not extend far off on the west side of the island.

FRENCH PASS.—Between Chango and Kebandiko islands is a channel with 4½ fathoms at low water springs, but it is very narrow; no satisfactory leading mark is to be found, and the distance in any case is shortened so little that the pass is not recommended. The eye and chart must be the guides if attempted.

Danzi Reef lies N.W. ¾ N. 1½ miles from Chango island. This is a small coral reef, awash at low water springs, with a one-fathom bank extending half a mile to the north and 2 cables to the west.

Shoal Patches.—Between Danzi and Mwamba Bawi is another patch with 1½ fathoms on it; the water gradually deepens on all sides. Also, at 2 miles west of Danzi reef are a number of small patches, with 3 fathoms water on them.

GREAT PASS, between Chango island and its reefs on the east, and the reefs of Danzi on the west and the dangers lying to the south and east of the latter, is the widest and deepest channel into Zanzibar harbour from the northward; but from the above numerous hidden dangers it cannot be considered so good a passage as the English pass, and no leading marks can be given. With the sun in a favourable position and a fair wind, Great pass would be safe to navigate from aloft.

COAST.—From Betel-el Rás the coast trends northward with slight indentations, sandy bays, beaches, and low rocky cliffs, for 13 miles, to Rás Oswawembe, the north-western point of Zanzibar island. The land behind rises gently, is well cultivated, and covered with trees. The shore is generally steep-to, and may be approached to within a long half a mile, and it is better to close the shore to avoid the many outlying reefs. At the village of Mungopani, 4½ miles south of Rás Oswawembe, are two white pillars, which show clearly with a western sun.

Bububu is a palace at the mouth of a small river, a mile N.N.E. of Betel Rás. Here, another aqueduct conveys water to the sea but the water is open to the same objections as that of Mtoni, namely, its use for washing purposes before it arrives at the shore.

FAWATU is a large reef lying N.N.W. ½ W., distant 2 miles from Danzi reef, and 5 miles from the nearest part of Zanzibar island. It is upwards of 2 miles in length north and south, and dries in patches, but more especially at the north and south extremities. About 6 cables from the south end is a sand head 9 feet above low water springs. This reef is always easily to be seen, but must be approached with caution. From the sand head, Masingini house bears S.E. ⅝ E. distant 8½ miles, and Kidutani (a rounded palm-covered hill 200 feet high) E. ¼ S. 6¼ miles.

Yambwa Ngome Reef.—At 2 miles north of the northern dry part of Fawatu reef is the outer Yambwa Ngome, a flat coral reef, awash at low water, with a small head which dries at half tide. It is steep-to all round, and is 4 cables in length north and south, and 2 cables in breadth.

At 1½ miles eastward is the Inner Yambwa Ngome, a similar reef, but only dry at low springs; it is somewhat larger than the other, and is 3 miles from the Zanzibar shore.

RÁS OSWAWEMBE is a low cliff point, stretching to the north, and forms the south side of the entrance to Kokotoni harbour. The western extremity of Rás Oswawembe, is sand.

At 2⅓ miles W. ½ S. from Rás Oswawembe, is a small bank with 5 fathoms water on it.

COAST.—From Rás Oswawembe the coast trends to the north-east and northward for 13 miles to Rás Nungwe, the north point of Zanzibar island, sweeping round in a large bight, and forming the eastern side of Kokotoni harbour. Immediately eastward of Rás Oswawembe the coast recedes to the south, forming a mangrove bay, called Mwanda, which is 1½ miles deep, and about 2 miles wide. At the head of the bay the river Mzinga-Mzinga, the largest in the island, discharges itself from an extensive plain, which is mostly under water in the rainy season. Rás Mwanda, the eastern point of this bay, is also of mangrove. Mwanda village is built on the shore to the southward of the point.

From Rás Mwanda to Rás Nungwe the shore is sandy, with alternate low cliffs. Two small islets lie half a mile off Zanzibar shore, halfway between Gungodi hill and Rás Nungwe; they are on the shore reef which here dries for 1¾ miles from the coast.

Water.—The Mto Kipanga falls into the sea at Rás Mwanda, and the water, which is good, never fails, coming from perennial springs a few miles inland. A detached boat can easily send her barricoes a few hundred yards up the bed of the stream to be filled. The mouth is concealed in mangroves, and is not easy to find.

KOKOTONI is a district and village north of Mwanda. There is an extensive sugar estate here, now in English hands, with a large factory on the banks of the Kipanga, fitted with steam machinery, both for sugar and cocoa-nut oil manufacture. The produce is either shipped directly to a vessel lying in Kokotoni harbour, or sent to Zanzibar by dhows. A zinc-roofed shed (the only one in the island) on the beach marks the shipping place and termination of the estate road.

Hills.—To the S.E. of Rás Oswawembe, and 4 miles from the west coast of Zanzibar, at the farther side of the Mzinga-Mzinga plain, is a range of hills extending north and south called Dongi, 330 feet high, and covered with cocoa-nut trees.

Kokotoni hill is an isolated rounded eminence 260 feet high, in the same line with, but cut off from, Dongi hills by deep ravines, through one of which Kipangi river runs. The house of the manager of the Kokotoni estate stands on the summit of this hill.

Gungodi hill.—To the north of Kokotoni are several isolated hills, the most remarkable of which is Gungodi, a coralline tumulus similar to and greatly resembling Hatajwa on the south.

TUMBATU is a long narrow island 5¾ miles N. by E. and S. by W., and 1¼ miles across at its widest part. It lies to the north of Rás Oswawembe, and its nearest point is distant 1¼ miles from the Kokotoni shore.

The island is flat and rocky, being faced with low cliffs everywhere, excepting a few mangrove inlets on its east side, and is covered with dense trees 40 to 50 feet high. The western shore is straight and almost steep-to, the coral ledge nowhere extending off more than a cable. Off the southern point the reef is awash for 1¼ miles in the direction of Rás Oswawembe point, and terminates in a sand head, called Mmawali, which dries 11 feet at lowest springs. Off the eastern or inner shore of the island, the coral dries at an average distance of a mile, greatly contracting the passage into Kokotoni harbour.

Tumbatu has the reputation of supplying the best sailors and pilots for the Zanzibar seas; there is no water on the island, the necessary supply being brought over from Kokotoni.

Puopo is a small rocky, wooded island, standing on the edge of the reef on the eastern side of Tumbatu island, from which it is distant three-quarters of a mile. The reef is tolerably steep-to.

Mwana Mwana Island is a small coral island covered with dense jungle, on the northern part of Tumbatu reef. Boats can pass between Mwana Mwana and Tumbatu islands at high water, but the breaks must be avoided. The reef dries to the north of Mwana Mwana island for half a mile, and shoals off for a quarter of a mile more, while to the N.E. the shoal water extends for nearly 1½ miles. The outer edge of this shoal water generally shows, but the island should be given a wide berth to ensure safety. To the west of Mwana Mwana island the deep water is within one cable of the shore. When the western extremity of Tumbatu island is open of the western extremity of Mwana Mwana island, a vessel will be to westward of Mwana Mwana reef.

SHEARWATER PATCHES.—To the west of Tumbatu island is a large area of shoal water containing numberless patches of coral, covering a space of more than 8 miles north and south by 4 miles wide, and varying in depth from a few feet to 10 fathoms, the nearest danger being 2⅓ miles from Tumbatu island.

Wright Rock, on the inner or east side of the shoal ground; is a small head nearly awash, with the north point of Mwana Mwana island bearing N.E. by E. ¼ E. distant 5 miles, the south point of Tumbatu island S.E. ½ S. southerly 5 miles, and 3⅓ miles from the shore of Tumbati. One mile to the E.N.E. of Wright rock is a small bank with 2½ fathoms water on it, and is the nearest shoal to Tumbatu island.

Langdon Rock, near the south end of this area, is also nearly awash. From the rock, Rás Oswawembe bears E. by S. ¾ S. distant nearly 5 miles. At about three-quarters of a mile to the S.E. of Langdon rock is another patch with one fathom water on it and the southernmost of the Shearwater dangers. These reefs can sometimes be seen from aloft, but as they are frequently undiscernible until close to them, especially in the case of the smaller patches, vessels should keep about a mile from the shore of Tumbatu island and Rás Oswawembe, which are both steep-to.

Kokotoni hill bearing E. ½ S. and open southward of Rás Oswawembe leads south of these dangers.

NANKIVELL ROCK, with 3 fathoms on it at low springs, lies with the north point of Mwana Mwana island bearing S.W. distant 2½ miles, and Rás Nungwe E. by S. ⅛ S. 3 miles. This small patch is in the fairway of vessels rounding Rás Nungwe and Mwana Mwana, and care must be taken to avoid it. To clear the rock, keep Rás Nungwe wide of an E. by S. ⅛ S. bearing until the western extremity of Tumbatu island opens west of Mwana Mwana island.

KOKOTONI HARBOUR is formed between Tumbatu island and the west coast of the north part of Zanzibar island. It is a large and sheltered anchorage with depths of 4 to 9 fathoms. There are many little villages on the Zanzibar shore, and the country is well cultivated. Cattle, fowls, and eggs are plentiful. Most of the traders to Pemba start from Kokotoni.

The southern channel, fit only for vessels under 12 feet draught, is between Rás Oswawembe and the south point of Tumbatu island. Though these two points are 2¼ miles distant from each other, the channel is narrowed at the entrance to a width of a mile by the projecting reef of Mmawali and the bank stretching north from Rás Oswawembe ; there is not more than 2½ fathoms (mud) in the deepest part between these points.

Farther to the eastward, and midway between Rás Mwanda and the south point of Tumbatu island, is a large bank of sand, part of which is awash. This bank nearly blocks up the channel, leaving a narrow passage to the south, between it and Rás Mwanda, 5 and 6 fathoms deep. The bank can generally be seen from aloft, but the water is not clear. To the north-east of the bank, the water again shoals to 4 fathoms, but the channel widens, and when Makutani reef off the south-east point of Tumbatu (the mangroves only on which never cover) is abeam, the water again deepens to 7 fathoms.

The northern channel between the reefs of Tumbatu and the reefs bordering the shore of Zanzibar is narrow, but with not less than 6 fathoms water throughout. It is 2½ miles wide at the entrance between Mwana Mwana island and Rás Nungwe, and is rapidly narrowed as Puopo island is approached, by the reefs on either side, which project to a great distance from the shore. Abreast the north point of Puopo island the channel is less than a quarter of a mile wide ; to the south of the island the harbour opens out.

Anchorage.—A good berth for a small vessel is in 4½ fathoms, mud, off Kokotoni village, with the south point of Tumbatu island bearing W. by N. ¾ N., the eastern extremity of Puopo island N. by E. ½ E., and a square stone tower house, on the shore of Kokotoni, S. by E. ½ E. For a large vessel, a berth farther north in 8 fathoms, mud, with the south point of Tumbatu island bearing W. ¾ S., and Puopo island North, would be better, and the tide not so strong.

Tides.—It is high water in Kokotoni harbour, full and change, at 4h. 10m. ; springs rise 15 feet, neaps 10 feet. The tidal streams run very strong through Kokotoni harbour at springs. As a rule the flood runs south, and the ebb north, but both streams are much influenced by the wind. In the south-west moonsoon, at neaps, the current is continuous to the north, and during this season the greatest irregularity in the tides prevails. The tidal streams are strongest off Rás Mwanda.

Directions.—A small vessel intending to enter from the south must be guided mainly by the eye and the chart, as there are no good leading marks. In entering, pass nearly a mile to the north of Rás Oswawembe, and then—steer for a little inside Rás Mwanda on—an E. by S. ½ S. course, passing Mmawali sand (which is always plainly to be seen) at a distance of 4 cables. When Puopo island begins to open of the south-east point of Tumbatu island, the centre reef will be on the port beam, and should be made out from aloft, in which case round it by eye, giving the visible part a good berth, as it deepens very gradually. Should the reef not be discerned, when the centre of Puopo island is in line with the south-east point of Tumbatu island, alter course, steer for Gungodi hill, having Makutani flat islet slightly on the port bow; this course will lead to the anchorage.

The water is very thick, concealing any shoal with more than 12 feet on it, and as the currents are strong, too much care cannot be taken. There is, however, no swell, and the bottom is generally soft.

To enter from the north, after passing Rás Nungwe, steer with Mwana Mwana island a point on the starboard bow till about midway between that island and the Zanzibar shore; then alter course to the southward, till Puopo island bears half a point on the starboard bow. Steer down on this line, looking out for the reef off the coast of Zanzibar which stretches to a distance of nearly 2 miles from it, and encloses two small islands, which can generally be seen; also keeping a sharp look out for the reef to the north of Puopo island, which is very dangerous and difficult to be seen.

When the eastern extremes of Puopo island open of one another, alter course, and steer to pass at a distance of 3 cables from it. When the centre of Puopo island is abeam of the vessel, all dangers will have been passed and anchorage can be chosen as desired. There is a good deal of swell to the northward of Puopo island, but it does not fetch home through the narrows to the N.E. of that island.

RÁS NUNGWE or Hog point, the north extreme of Zanzibar island, is sandy with low cliff at the back, clothed with dense jungle. The fringing reef close to the shore west of the cape extends to the north of it for three-quarters of a mile, and then turns to the east and south, following the trend of the land at the same distance. The land behind Rás Nungwe is undulating, and the highest trees are about 200 feet above the sea.

Anchorage.—There is good temporary anchorage, especially in the S.W. monsoon, to the west of Rás Nungwe in 12 fathoms, sand, with the point bearing East, a little more than a mile distant.

DIRECTIONS from the NORTH.—In making Rás Nungwe, the north point of Zanzibar island, due allowance must be made for the rapid current setting to the N.N.W., through the channel between Zanzibar and Pemba. In the S.W. monsoon the current averages 3 knots an hour; in the N.E. monsoon a little more than half that rate in the same direction.

Rás Nungwe makes as a low uniform woody point, and should be passed at a distance of more than a mile to clear the projecting reef, which can always be seen by the breakers. After rounding the point care should be taken to avoid Nankivell rock. If in a small vessel under favourable circumstances it is intended to go inside the rock, bring Rás Nungwe to bear East and steer West, which course made good, will lead in the fairway between the rock and Mwana Mwana reef, and when the western extreme of Tumbatu island is open west of Mwana Mwana, a vessel may steer to the southward along the Tumbatu shore at a distance of three-quarters of a mile.

To proceed northward of Nankivell rock: when Rás Nungwe bears South distant 1½ miles, steer West, till the western extreme of Tumbatu island is open west of Mwana Mwana island, as before. In either case Rás Nungwe should not be brought on an E. by S. ⅛ S. bearing until the west extreme of Tumbatu is open west of Mwana Mwana.

If too late to proceed farther, it is better to anchor under Rás Nungwe than under Tumbatu island, as the water off that island is inconveniently deep.

As the dangerous Shearwater patches do not generally show well, and there are other reefs to the southward, a few miles from the coast, keep along the land at the distance of three-quarters of a mile, until the islands off Zanzibar town are seen; then steer for Chapani island, or if that be not made out, bring the point of Zanzibar town a little on the starboard bow, till the leading mark for the English pass can be recognised, and proceed as directed at page 347.

These directions are for a vessel with a fair wind or for a steam vessel. In the S.W. monsoon a sailing vessel should take the early morning, when the wind will be from the south-westward, or the afternoon, after it has come round to the south-eastward. At either time she may lay along the land from Mwana Mwana island, and escape working to windward, which is to be avoided if possible, in consequence of the numerous outlying reefs to the westward. The shore of Zanzibar island should always be kept aboard to avoid the outlying reefs.

LEVEN BANK is of coral with from 7 to 10 fathoms water on it, lying about 5 miles N. by E. ½ E. from Rás Nungwe. It is 1½ miles in length N.N.E. and S.S.W., a third of a mile in breadth, and steep-to, rising abruptly from a depth of 100 fathoms. The surface of the bank is flat and in light winds makes a good temporary anchorage. From it, Kokotoni hill is in line with the western extreme of Rás Nunge; Mwana Mwana island bears S.W.; and Mwemba island, the tops of the trees on which are just visible, S. by E.

Current.—At the Leven bank the current always runs to the N.N.W. with a velocity in the S.W. moonsoon of from 2½ to 4 knots an hour, decreasing to half that rate in the N.E. moonsoon. H.M. ship *Daphne*, 13th May 1873, in lat. 3° 58′ S., long. 39° 53′ E., at noon, records the current—outside Pemba—North 96 miles. The vessel was under sail, hove to part of the 24 hours, and in lat. 6° 0′ S. the previous noon.

COAST.—From Rás Nungwe the east coast of Zanzibar island trends S.E. by S. for 6 miles to a point, opposite which is the island of Mwemba.

The coast is alternately of low cliff and sandy bays, and is nearly straight. The coral ledge dries off for three quarters of a mile and is steep. It always shows, the sea breaking heavily.

From opposite Mwemba island the coast of Zanzibar island trends southward in a gentle inward sweep to Rás Urua, a distance of 16 miles. This latter part is mostly sandy and low, backed by rising ground a few miles inland, and bordered by a coral ledge extending from a half to a mile from the shore, steep-to, with a wall-like edge, 30 fathoms being generally found at less than three-quarters of a mile outside the reef.

To the north of Rás Urua is a small bay in which are two large villages, Pongwi and Mdudu, where a boat can obtain supplies.

Opposite Rás Urua is a break in the rim of the coral reef, through which a boat can pass by watching an opportunity. There is generally enough water on the reef, inside the edge, to float a canoe.

MWEMBA ISLAND is a small sand island, covered with tall casuarina trees, standing on the inshore edge of a large coral reef, 4 miles long north and south, and 2 miles wide. The reef dries at low water springs with a steep edge, and is separated from the east coast of Zanzibar island by a channel, 1¼ miles wide, 50 fathoms deep, and free from danger. The inner or western point of Mwemba island is steep, and may be passed at a prudent distance. The island is resorted to by fishermen, and there is a small supply of good water in a masonry well, in the centre of the island.

Anchorage.—There is good anchorage three-quarters of a mile north of Mwemba island, in 10 fathoms water, sand, where shelter will be found, particularly in the S.W. monsoon, under the lee of the extensive reef.

CHUAKA HEAD, 4¾ miles S.E. ½ S. of Rás Urua, is a bold headland about 70 feet above the sea, faced with cliffs, and the northern extremity of a small peninsula. It is surrounded by the coral reef, which stretches nearly 1½ miles to the north of it, sheltering what anchorage there is. Its outer edge is not steep-to, and should not be rounded too closely, especially as the water is thick and discoloured.

Chuaka Bay.—The coast from Rás Urua runs 8 miles to the southward, forming the west side of Chuaka bay, the head of which is 3½ miles across east and west; the small peninsula which terminating in Chuaka head with its projecting reef, about 5 miles in length, bounds the east side of the bay. The shores are all low, and generally sandy or mangrove. This large bay is, however, so shallow as to be nearly useless, for south of a line drawn west from Chuaka head the bottom dries at low water, and there is only a small area to the N.W. of the head available as an anchorage.

Halfway between Chuaka head and Rás Urua is a small reef just awash, on which the sea usually breaks. The head of the bay diverges into mangrove creeks. Several villages stand on the shore, of which Chuaka, in the south-west corner of the bay, is the principal. Inland to the west several low but abrupt isolated coralline eminences rise above the surrounding vegetation.

Anchorage.—The best and almost the only anchorage in Chuaka bay is to the N.W. of Chuaka head reef, between it and the middle bank, in 5 fathoms, sand, with the outer edge of Chuaka head bearing S.E. by S., and the nearest part of the fringing reef 3 cables distant. The tides set strongly and regularly into and out of the bay.

COAST.—From Chuaka head the coast, which is generally rocky, trends southward for 4 miles to a low rounded point, well covered with cocoa-nut trees; thence it is sandy and nearly straight to Rás Makunduchi, a rocky projection 16 miles from Chuaka head. There are several villages on the shore, which is all low, and the coral ledge, which north of Makunduchi village extends 1¾ miles from the shore, dries off on an average more than a mile, and is steep-to.

From Rás Makunduchi the coast sweeps round in a curve convex to the S.E. for a distance of 9 miles to Rás Kizimkazi, and presents a uniform, low, cliff, backed by gently rising ground 100 feet in height. The cliff is only broken just south of Rás Makunduchi, where there is a slight sandy bay, 2 miles in length. The coral ledge continues with the same features as before, but does not extend quite so far off the shore.

PEMBA ISLAND, known by the Arabs as Ul Huthera or Green island, is about 40 miles in length N.N.E. and S.S.W., and about 10 miles in breadth, including the islands on the west side, which form the harbours. It is of moderate elevation, being not more than 200 feet above the sea in any part; of coral foundation, but covered by a most productive soil, yielding luxuriantly every kind of produce, especially rice of the finest quality; this island, in fact, being the granary of the neighbouring coast. There is excellent ship timber on the island.*

SAÏD POINT, the southern extreme of Pemba, is about 25 miles from the north end of Zanzibar. The south end of Pemba is well wooded and surrounded by a dangerous coast reef, with no anchorage off it.

The current to the southward of Pemba sets into the Pemba channel at the rate of 2 or 3 miles an hour.

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* Owen.

The EAST COAST of Pemba is rather low, and should be approached with care at night, but there does not appear to be any dangers beyond the coast reef, which nowhere extends more than a mile from shore, and is steep-to. Within 2 miles of the shore no soundings have been obtained with the hand lead.

The current in December off the east coast of Pemba has been found to be as little as three-quarters of a mile an hour northerly, but it much exceeds that during the southerly monsoon.

The WEST COAST is lined with a succession of islands, which enclose fine sheltered ports between them and the main island: these islands and reefs appear to be bold on their west sides. Nav.-Lieut. E. Nankivell, H.M.S. *Daphne*, 1873, writes:—"Kawegua gap shows very clearly from the west, but Foondo gap was quite hidden." Kawegua gap has an islet in the centre, but the best mark for a vessel to check her position are the three rocks to the southward of the island next north of Mesal island; the reef between these rocks and Mesal island shows well when the sun is in a favourable position.

Anchorage.—Good anchorage may be obtained to the southward of Mesal island on the north side of entrance to port Chak Chak, without entering any of the harbours, but if intending to bring up here or to enter port Chak Chak, care should be taken not to be set past the intended port by the northerly current. H.M.S. *Brisk*, when approaching from the southward, rounded Soteman and Brisk islands and the reef on which they stand by the eye, the reefs showing well, and anchored in 7 fathoms, with Mesal island N. ⅝ E.; Cocoa-nut point S. by W. ¾ W.; and Brisk island S.W. by W. A good smooth anchorage, but there appeared to be several shoal sand patches inshore of this position, and the inner part of the bay has not been examined; care is therefore requisite if proceeding farther inshore.

The *Nimble* passed over a distance of half a mile or more in 19 fathoms and anchored in this depth, sandy bottom, with Mesal island N. ¾ E., extremes of Makongui island S. ½ W. to S.S.E. ⅛ E., and Brisk island S.W. ½ S. The islets between Saïd point and Soteman island appear like black gaps in a sandy beach; Makongui has red patches on it; Cocoa-nut point does not show well from the westward.

Entering this anchorage from the northward, the east of the three rocks just mentioned, on with the west extreme of the next island north of Mesal leads westward of Mesal reef; keeping this mark on until the detached rock on the west side of Mesal island begins to open clear of that island a vessel will be well to the southward, and may steer to the eastward and anchor as convenient.

PORT CHAK CHAK, the southern of the several ports, is a safe harbour, but the soundings are inconveniently deep for anchoring in some parts. A spit, with not more than 2¼ fathoms on it, runs out in a north-west direction from the Pemba shore, for more than 1½ miles, with Mesal island bearing N.W. ½ N. The village stands at the head of the creek about E. by S. from Mesal island. The shores of this creek are lined with reefs, but a course E. ½ S. from the centre of Mesal island leads up to an anchorage in 5 fathoms, with not less than 7 fathoms water. The watering place is up this creek. H.M.S. *Espiègle* in 1822 anchored in 9 fathoms, with Mesal island N.W. by N.*

Mesal Island, on the north-west side of entrance to port Chak Chak, is about three-quarters of a mile in extent east and west, and rather more north and south; it is well wooded and from the westward appears slightly bluff at the north end. A reef extends nearly a mile S.W. by S. from the south side of the island, which will be seen by the discoloured water; also a considerable reef runs off the east point of the island, and for some distance on the south-east side. The island should have a berth of at least a mile.

Makongui Island in the south part of Chak Chak bay is wooded and the south part has high trees forming a tuft. Brisk island is wooded but low.

TIDES.—It is high water at port Chak Chak, full and change, at 4h. 15m.; springs rise 12 feet. The tide runs strongly through all the gaps between the islands.

PORT COCKBURN.—This fine harbour, and also port George to the northward of it, are apparently clean, with good depths for anchoring in places, but rather deep water in others. These ports must be approached from the southward through port Chak Chak, unless there be any good pass among the several gaps between the islands, of which we have no information, with the exception that the tides are rapid through all the gaps.

KEGOMACHY POINT, the north-west extreme of Pemba island, is in lat. 4° 52′ S., long. 39° 40′ 40″ E. There is anchorage on the western side of the point abreast of a small sandy bay: the north extreme of the point must be given a wide berth, to clear a reef which extends northward more than 2 miles, on which a long spit of sand dries at low water.

The *Philomel* on the 5th December 1876, anchored in 9 fathoms, with Kegomachy point S.W. ¾ S., and cape Hay S.E. by E. ¾ E. The *Magpie* being unable to find the anchorage on the western side of Kegomachy point, there being deep water close up to the rocks, proceeded round north and eastward of the spit and anchored in 7½ fathoms, with Kegomachy point S.W. westerly, cape Hay E. by S. ¾ S., and Waseen peak N.W. ¼ W. westerly.

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* *See* plan of Cockburn, George, and Chak Chak ports, No. 1,812; scale, $m = 0 \cdot 4$ inch.

CAPE HAY, the north-east extreme of Pemba, is in lat 4° 54′ 10″ S, long. 39° 49′ 45″ E.* It appears to be fronted by a continuation of the reef bordering the east coast, and which ends about a mile to the northward of cape Hay, forming an anchorage westward of the reef. This anchorage, called port Wanyeeka, is said to have convenient depths, and to be well sheltered during the southerly monsoon, but we have no direct information about it.

PEMBA KNOLLS.—The north side of Pemba forms a shallow bay about 9 miles wide between cape Hay and Kegomachy point. This bay has numerous anchorages for dhows during the southerly monsoon, but it appears to be full of dangerous reefs, the northernmost of which, called the Pemba knolls, extends 5 or 6 miles from the shore. Owen describes these as a complete labyrinth of coral rocks.

A bank of soundings extends 10 or 12 miles to the northward of Pemba, where anchorage may be obtained in some places to the north-west of Pemba knolls, but this bank must be approached with caution, as it does not appear to have been closely examined.

PEMBA CHANNEL.—The navigable part of this channel is contracted by the Waseen and North Head reefs bordering the coast of Africa, to 25 miles at the south end, and 15 miles at the north end, but between Pemba island and these dangers it appears to be all clear with deep water. It is not recommended to run through this channel at night, even with a commanding breeze, as the strength of the current is very uncertain, and the wind frequently drops after midnight. But if obliged to bear up through this channel when unable to pass out to the southward of Pemba, (which frequently happens to ships leaving Zanzibar with the sea breeze,) take a good departure from the south end of Pemba, and keep nearer to the island shore than to the main, the former being bolder.

Captain Moresby in 1822, when passing through Pemba channel, reports having obtained soundings in 7 fathoms, when the north end (Kegomachy point ?) of Pemba bore S. 20° E., and immediately before and afterwards no bottom at 80 fathoms, but it is not stated at what distance from shore.

The Current sets about N.N.W. into the Pemba channel, and afterwards appears to set right through, rather inclining to the main. In August it has been found running between 2 and 3 knots an hour, but it not unfrequently exceeds this in strength, causing a great ripple near the island shore, which gives a false appearance of breakers.

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* Owen.

Having given a description of the coasts of the islands of Zanzibar and Pemba, we now resume that of the main land from page 329.

The WASEEN REEFS consist of a line of sand and coral reefs parallel to the shore, and at a distance of 4 or 5 miles from it, having from 2 to 7 fathoms water inside them, but deep water near their seaward side.* The North Head reefs, 35 miles to the N.W. by N. of the South Head reefs, are between 7 and 8 miles from shore, at the north end of Pemba channel. The South Head reef lies rather more than 3½ miles from the shore, with no bottom with 55 fathoms, at 2 miles outside the reef.

COAST.—The land is elevated in the vicinity of Pangani bay, but more particularly on the southern side of the river's mouth, where Bweni, a perpendicular bluff hill, rises immediately over the small village of the same name.

The coast of the main land inside Pemba island is low, but well wooded, and apparently fertile. The shore is sandy, with occasionally a small intervening cliff of coral; * but it is unsafe to approach, on account of the Waseen reefs just described. Except in one part, where the coast is a kind of putrid marsh, the shores are lined with villages which are always conspicuous by a lofty grove of cocoa-nut trees, in the midst of which they are built. *

Although the coast is low, there is a range of hills in the background and occasionally in the distance may be seen curiously isolated mountains, which present a remarkable contrast to the general flatness of the country. One of them, called Waseen peak, is about 2,500 feet high, and can be seen distinctly from Pemba island.*

Nav. Lieut. E. Nankivell, H.M.S. *Daphne*, 1873, writes:—The Sheemba range does not appear to extend farther north than lat. 4° 47′ S. where it terminates in a remarkable hill higher than the rest of the range.

Ulenge Island.—The north side of entrance to Tanga harbour is bounded by extensive coral reefs which extend southward from Ulenge island nearly 1½ miles. There is only one fathom water, on the south extreme of the reef, and 9 or 10 fathoms 3 or 4 cables from it. As this part of the coast from the South head reef northward is mapped on the chart No. 644 from a running survey and as several dangers are not marked, great caution is necessary, and vessels should not approach the shore without a vigilant look out from aloft and with the sun in a favourable position for seeing the reefs.

TANGA or KOKWANE BAY.—The entrance to this bay, about 23 miles N.N.E. of Pangani bay, is between Rás Kasone, which is about 40 feet high on the south, and the coral reef projecting from the low mangrove point on the north, and may be about 1¼ miles wide. Rás Kasone is surrounded by shallow water which extends off a third of a mile, whilst on the north, and just outside the line of the two points, a sand bank projects southward, narrowing the channel into the bay to about 4 cables wide. Within, the bay opens out to 3 miles north and south, and nearly 1½ miles east and west. The north and western shores are of dense mangroves but the eastern, and southern where the town is, is an elevated plateau and should be tolerably healthy, and all round the bay shallow water extends some distance off, but less so on its south-east side.*

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* Owen.

In the southern part of the bay is Tanga island, about half a mile in extent east and west, with a little village on it; and on the south shore of the bay is the large town of Tanga having much trade with the interior and of considerable importance as a trading centre on the coast. Tanga island is surrounded with shallow water but mainly on its north-east and west sides. The reef and shallow water on the south-east side of the bay projects off a third of a mile, and between it and Tanga island is an excellent harbour with anchoring ground extending east and west over a space of a mile, the narrowest part being about a quarter of a mile in breadth, with an average depth of 5 fathoms Fresh supplies of all kinds are obtainable.

The Zigi river called Mgambo at its mouth runs into the north-west part of the bay; the land on its north bank rises to about 100 feet high, and a mile within on the same shore is the village of Mvuni, and half a mile farther on that of Muhengo. Hippopotami are numerous in the river.

Niule Reef.—This is a drying reef 4½ miles long north and south; its north end is E. by S. 4 miles from the entrance to Tanga. A sand cay lies on its north-west extreme, which covers at high tides. The north end of Niule reef is a mile E.N.E. from the sand cay.

Directions.—On nearing Tanga bay, the wooded islands of Yambe and Karange will be a guide in approaching the north end of Niule reef. Bring the right extreme of Ulenge island to bear N.N.W. ½ W. and steer for it, which will lead through the channel between Niule reef and Fungu Nyama, which does not show, lying 1¼ miles to the north-eastward. A dry sand cay on Fungu Nyama will generally be seen on the starboard bow; it lies N.E. ½ E. distant 3½ miles from the Niule sand cay.†

When the north cliff of Tanga island is open to the north of the extremity of the low mangroves off Rás Kasone bearing W. ½ N., steer for it until the entrance of Mgambo river bears N.W. ¾ N.; then steer for the river until the north-west cliff of Tanga island bears W. by S. ¼ S.; when alter course to West until a white pillar eastward of the town bears

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* *See* Admiralty chart Tanga (or Kokwane harbour) bay and approaches, No. 859; scale, $m = 1\cdot92$ inches. To be published in about January 1879.

† For later information and directions for Tanga bay *see* appendix, page 447.

S.S.W. ½ W. which bearing will lead to the anchorage, but do not go farther in than is necessary to avoid the swell.

WASEEN ISLAND, in lat. about 4° 40′ S., is not easily distinguished from the southward, as it is blended with the mainland, from which it is separated but a short distance, forming a safe anchorage in any weather. Close to the shore of the main land, about half a mile inside cape Waseen, is a little islet like a haycock, and about half a mile west of it is a small shoal a cable from the shore. A village stands on the north side of the island near the west end, and off it is the anchorage for dhows.

A reef extends a long way both from the east and west end of the island, that from the east end is at times distinctly seen and appears to have less than 4 fathoms water on it; with Waseen peak on with Rashid point, and the centre of Waseen island bearing west, the depth of water is 6 fathoms.* To clear the north-east part of the reef, keep Waseen peaks their own breadth open of Rashid point, until the north-west point of Waseen island is shut in with cape Waseen; then steer in about W. by S. for the middle of the entrance, keeping the north-west point of the island well open of the north-east point, which will lead about mid-channel. In going out attend to this latter mark until 2 or 3 miles from the land.

Supplies.—Bullocks, sheep, and fowls, may be obtained at the village at reasonable prices, but no fruit or vegetables. Three hundred fish were taken with the seine in a few hours on the beach opposite the village. The inhabitants friendly.

WASEEN BANK.—This extensive bank lies to the southward of Waseen island with two small islets on its south side about the size of a vessel's cutter. There are also two other islets on the eastern part of the bank; the south-eastern, the smaller of the two, is wooded and about half a mile in length; the northern islet is wooded and when first seen from the southward appears like a number of small islets. The east end of this bank should be approached with caution, as there are no soundings with the hand-lead until close-to, and at a mile from its supposed position the bank was not seen.

COAST.—A dry sand bank just north of cape Waseen extends from the shore in an easterly direction for about half a mile, and appears steep to on the south side, which can be passed at the distance of half a mile. Rachid point is about 2 miles northward of cape Waseen. Chala bay, about 15 miles northward of the cape, appears to be protected by a reef extending southward from the point of the same name. From Chala point to Reitz point at the south side of entrance to Mombaza the coast is unbroken, but in lat. 4° 16′ projects a little, and hereabouts is a conspicuous clump of trees with a black cliff below them.* The shore is all along bordered by a reef, which 1¼ miles to the south-east of Reitz point extends off more than a mile, and is here called Andromachi reef.†

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* The information about Waseen island and bank is chiefly by Nav. Lieutenant E. Nankivell, H.M.S. *Daphne*, 1873.

COREA MOMBAZA.—The hummocks of Mombas or Corea Mombaza are three low but remarkable hummocks, rising about 5 miles N. by E. from port Mombaza, and are most remarkable when seen from the eastward, as they do not then appear so far apart.

The land is from 40 to 60 feet high near the sea; and being about the same height as Mombaza island, the latter is not easily distinguished. There are some hills of moderate elevation in the background.

MOMBAZA ISLAND, the native name of which is Mvita, is about 3 miles in length north and south, and 1½ miles in breadth, with a level surface, about 40 or 60 feet high: the shore is steep all round, in places perpendicular, and generally deep water close in to the shore. On the north side of the island the water is shallower, and there is a ford, passable at low water spring tides only. Owen justly compares this island to a huge castle encircled by a moat.‡

The town and fort of Mombaza are on the eastern side of the island. The fort is large and of quadrangular form, and built on a massive portion of rock elevated some feet above that which forms the surface of the island; the rock is cut down so as to form a deep and broad moat, the masonry above rising as a continuance of the rock. The entrance projects over the moat, producing, with its sculptured stone work, an imposing effect: it is of more modern construction than the rest, having been built in 1635, in which year the other parts of the fort were renovated.§ The longitude of Mombaza cemetery is 39° 41′ 23″ E.‖

PORT MOMBAZA is an inlet about 2 cables wide, and more than a mile long on the east side of Mombaza island, with good anchoring depths close to the shore on each side in most places. From the head of port Mombaza, a winding but deep channel communicates with port Tudor. The entrance of port Mombaza is narrow, but it is easy of access in either monsoon. During the north-east monsoon the sea breeze blows at E. by N., which allows any tolerably good sailing vessel to lay in. During the southerly monsoon the wind blows right in.

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* Nav. Lieut. E. Nankivell, 1873.

† *See* Admiralty chart:—Chala point to Kwyhoo bay, No. 1,811; scale, *m* = 0·16 inch.

‡ *See* Admiralty plan:—Mombaza island and ports, No. 666; scale, *m* = 1·2 inch.

§ Owen.

‖ Commander Wharton, 1877.

OUTER ROAD.—The anchorage here is between Leven reef head and the shallow rocky ground bordering the coast at the entrance of the port on the north-east, and Andromachi reef and the rocky shoal off it on the south-west. This rocky shoal reaches nearly 1¼ miles eastward of Reitz point with from 3 to 5 fathoms water on it, but in one spot only 10 feet; this shoal spot bears S.S.E. ¼ E. three-quarters of a mile from the pillar, and E. by S. ⅝ S. from the south-west extreme of Mombaza island. There is also a 5-fathom rocky patch, of small extent, well outside the anchorage; it bears S.E. ⅝ E. nearly 2 miles from the pillar.*

The coast reef on either side of Mombaza appears to be steep-to; and when there is any swell on, it is the best guide for entering the outer road, but the Leven reef head, the termination of the coast reef from the north, should be given a berth of half a mile on its south-west side. A small stone pillar painted black and white, about 15 feet high, stands on the south-east end of Mombaza island, which, kept N.W. by W. ½ W., will lead clear of the shoal ground projecting from Leven reef head; but this pillar is not always made out without the aid of a glass; in the forenoon it is distinct and has been seen 5 miles, but it is shaded in the afternoon. Coming from the northward during the northerly monsoon, follow the Leven reef along at the distance of a third of a mile, increasing the distance from the reef head to half a mile in rounding it.

This is an indifferent anchorage at all times, the bottom being rocky and uneven, and during the southerly monsoon there is a considerable swell increasing the danger of the anchorage. The best place to bring up during the northerly monsoon is under the lee of the north-eastern reef, in about 7 fathoms, with the eastern extreme of the fort bearing N.W. ½ N., and the south point of Mombaza island W. ½ N. When proceeding for this anchorage do not advance too far in, as the soundings become irregular and inconveniently deep for anchoring, continuing so until close to Mombaza island.

Directions.—From the southward Mombaza is easily recognised by the break in the land, the fort with its flagstaff is also conspicuous. A vessel can follow along the Andromachi reef at a prudent distance: the reef dries 2 or 3 feet at low water, along a distance of 3 or 4 miles and the sea breaks heavily on the shoaler parts. The Leven reef on the north side of entrance should have a berth of half a mile, the current considered, and a look out kept for discolored water. To enter port Mombaza from seaward, steer for the flagstaff on a N.W. ½ N. bearing until the pillar on the south-east point of Mombaza is seen, then bring the pillar to bear about N.W. ¼ W. westerly, and steer for it; when Direction point comes mid-channel between English point and the town side N. ½ W.;

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* French survey, 1848.

then steer for Direction point, keeping it nearly mid-channel, pass Pillar point within three-quarters of a cable, and follow the island shore along at that distance. The pillar may be made out by an old battery, close to the eastward of it.

Direction point is the first point above the town on the west side: it appears blended with the land at the back, slightly red, with a pillar on it (building in 1876), and black rocks lying at its extreme; but if these two marks are not distinguished, steer for the fort when it bears N. by W. ½ W., and follow the island shore at three-quarters of a cable distance up to the town. The pillar or a white-washed tree on Direction point, in line with the west end of the mission house having a zinc roof on the north shore bearing N. ½ W., leads along clear of the reefs of Mombaza island to mid-channel off English point. This mark however leads rather close to the second point on the island side, and the house should be opened slightly. The entrance being only a cable wide between the 5-fathom lines, great care should be taken in attending to the leading marks, as the tides run strong.

The island side may be approached to within three-quarters of a cable abreast of the pillar, and to 50 yards from thence to the town. The opposite side, below English point, has an extensive reef running off to the south-west, which narrows the channel to a cable wide. To clear this reef, observe a wide footworn sandy path on the east shore at the ferry; this sandy place (which shows very well) kept just open of English point clears the edge of the reef, which is not seen. Attention should always be given to this foot-path, as in the event of the other marks not being seen, when open of English point is an excellent guide to clear the reefs on the east side of the channel.

Anchorage.—Anchor in 11 or 12 fathoms water, in mid-channel, about one or 1½ cables above English point, observing that a flat runs off 1½ cables from shore in the bight to the northward of the town, but the east shore is bold, and English point steep-to. This reach of the harbour is the most roomy, and very snug. A large vessel should moor. The holding ground is good but the tide is strong, more especially the ebb, and when the sea breeze sets in strong, vessels swing broadside on between wind and tide, which occasionally causes a heavy jerk upon the cable.

Water.—Mombaza is not very amply supplied with water: a small quantity and good may be procured from a well. This well is on the mainland, about a quarter of a mile east of the ferry; it is 18 feet deep and 150 yards from the water's edge. About 4 tons may be obtained in a day, but if the well were properly cleaned out it would be a good watering place.

Supplies.—Cattle and vegetables are to be obtained, and fowls and fruit are abundant.

Winds.—During the north-east monsoon the sea breeze sets in daily at E. by N. about 10 a.m., and lasts fresh till sundown, when it hauls round and moderates to a light land wind at N. by E.; which continues until the sea breeze comes in again. The land wind is generally steadiest about 7 or 8 a.m., which is therefore a suitable time for going out under sail.

Tides.—It is high water, full and change, at 4h.; springs rise 11 feet; equinoxial springs 15 feet. The ebb and flood run nearly equal times, and about 2½ knots at springs.* At the anchorage above English point, the tide at neaps is scarcely perceptible.

PORT TUDOR is a fine land-locked harbour to the northward of Mombaza island, and is reached by a narrow winding channel on the east side of that island, which has depths of from 8 to 20 fathoms, and more in places, with bold shores. There are few more beautiful places than this winding channel with its steep wooded banks.

The anchorage at port Tudor is in from 5 to 10 fathoms, mud, but there are extensive flats on both sides of it. There appears to be no difficulty for a ship, however large, to steam up to this harbour, but sailing is impracticable on account of the windings. Off the north end of Mombaza island a dry rock will be seen, which must be given a berth of three-quarters of a cable.

PORT KILINDINI, which means "in the deeps," is a fine sheltered harbour on the west side of Mombaza island, and leads to port Reitz: it is about 2½ miles long by half a mile wide, with depths varying from 6 to 20 fathoms, and as much as 30 fathoms at each end of this port, where it is narrow. The bottom is rocky at the entrance, and also off Flora point at the west end of the port, but in other places sand and gravel, and in the upper half, mud. The shores are generally bold, but a 3-fathom bank projects about aquarter of a mile from shore between Kilindini point and village; and a shoal extending 3 cables in a N.N.W. and S.S.E. direction, lies with its centre rather more than 2 cables from the west shore, and half a mile S. by W. ¼ W. from Kilindini point; also, a coral head, dry at low water springs, lies a little to the south-east of the latter and nearly a quarter of a mile from the south shore. There are 6 fathoms water within 10 yards of the coral head, all round it.†

Directions.—To enter port Kilindini, steer for the pillar on the south-east point of Mombaza, bearing N.W. ½ W., until the south-west point of the island bears West; then steer for the latter, and when about 1½ cables from the island shore follow it along at that distance.

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* R. A. Newman, Master, R.N., 1822.

† French Survey, 1848.

A vessel of light draught intending to pass westward of the rocky shoal with 10 feet water on it, page 364, should follow the western reef (on which the sea always breaks) at about the distance of a cable, and when Reitz point bears W. by N., increase the distance from the reef to 2 cables, as a shelving spit runs off from its north-east extreme. When the south-west extreme of Mombaza bears W. ¼ N. or West, steer for it as before directed.

After the south-east point of Mombaza island is shut in behind the south-west point, about E.N.E., either shore may be approached at will as they are bold. To clear the bank off Kilindini village, and also the shoals off the west shore, Flora point N.N.W. ½ W. will be a fairway course; or pass to the westward of the shoals by following the west shore at the distance of a cable or less.*

Anchorage.—The best anchorage appears to be in 10 or 12 fathoms, about midway between Kilindini and Flora points, but vessels coming here for the purpose of watering may anchor more conveniently just to the northward, or inside the central shoal, off the watering place.

The Watering Place is on the western shore 6 or 7 cables to the northward of Kilindini cove: the water obtained here is very good but insufficient in quantity, not more than 2 tons being obtainable per day.*

PORT REITZ is a fine inland harbour about 4 miles east and west by one mile broad, and may be entered by vessels of any size without difficulty through port Kilindini which forms the channel to it. The western portion of port Reitz is much obstructed with shallows, but the eastern half has good anchorage in from 4 to 10 fathoms. The harbour has not been fully examined, and sand banks are said to exist in places.

LEVEN REEF.—The coast from Mombaza trends N.E. ½ N. 7½ miles to Matwapa river, and is bordered by the Leven reef, which runs nearly parallel to and about a mile from it. Leven reef is narrow, appears to be bold on its sea side, and forms a channel for dhows and boats between it and the coast.

Current.—A northerly current may always be expected off this part of the coast, running about three-quarters of a knot an hour during the north-east monsoon, and from one to 3 knots during the southerly monsoon.

Matwapa River runs into the sea in lat. 3° 57′ ½ S.; the river is deep inside, but Owen's survey does not show what water can be carried through the break in the reef at entrance into river. The reef continues from the north side of entrance along the coast to Kororito, and the channel inside it is navigable for small craft.

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* French Survey, 1848.

QUILIFE RIVER is in lat. about 3° 38′ S. A reef extends upwards of a mile from the north side of the river, and on the southern side there are some detached shoals with passages between them, one of which has 6 fathoms, and another 8 fathoms water.* H.M.S. *Ariel* entered this river piloted by a native of the place, and did not get less than 8 fathoms. When inside, the river forms a splendid harbour; vessels may anchor a mile from the mouth in 10 fathoms, but nearer the entrance are equally well protected by the reefs, and get the benefit of the sea breeze.*

The Town of Quilife is not on the banks of the river, but stands about half a mile up a small creek which communicates with the sea about 3 miles to the south-westward of the mouth of the Quilife: this creek is an apparent gap in the land seen from outside. At high water dhows can go up to the town, but they ground at low water.*

Supplies.—There is a small village at the entrance of the river on the northern shore, where sheep, goats, and fowls may be obtained.*

Water.—It is difficult to obtain fresh water at Quilife: what is used at the village is brackish, and has to be carried half a mile; the natives, however, say that 7 or 8 miles up the river the water is fresh.*

Directions.—A pilot may be obtained by sending to the town, and, with our present knowledge of the reefs at the mouth of this river, it would not be desirable to enter without one. To enter this river pass close to the outermost detached reef, leaving it on the port hand, and steer for the right of three patches of white sand (which will be seen close to the gap in the land just mentioned) until within a quarter of a mile of the shore, when steer along it. At the entrance of the river there is a spit on the southern shore, but it may be passed at 50 yards distance. On the north side of the entrance the water is shoal; a vessel should keep close to the southern shore until past the spit, when she will be clear of danger and may choose an anchorage in from 17 to 20 fathoms.*

OWYOMBO RIVER, in lat. about 3° 24′ S., appears to be large, and to have a bold shore near it with deep water;* this is all the information we have about it.

MELINDA ROADS, called also port Melinda, is an anchorage in lat. about 3° 16′ S., with depths of from 5 to 10 fathoms, partly protected to the northward and southward by reefs extending from the shore; it is well sheltered from the east by Leopard reef, which extends north and south 2¼ miles, its outer edge being about 2¾ miles from shore; this reef was so called in consequence of H.M.S. *Leopard* narrowly escaping being lost on its north part. When approaching from seaward, Melinda may be known by a ridge of high land, which, when on with Leopard reef, bears W. by N. ½ N. There appears to be convenient depths for anchoring outside the roads, both to the northward and southward of Leopard reef.*

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* Commander H. Fairfax, R.N., 1864.

There is much shoal water off the north and south ends of Leopard reef, which requires caution.

Tides.—It is high water in Melinda roads, full and change, at 4h. 15m.; springs rise 11 feet.

VASCO de GAMA'S PILLAR, about 3¼ miles to the northward of Melinda roads, is in lat. 3° 12′ 48″ S., long. 40° 9′ 20″ E.† It is from 20 to 25 feet high, having a cross with the arms of Portugal on it at the top, and is erected at the extremity of a narrow rocky promontory, which serves as a pier to a small cove to the westward of the pillar, and which appears to have been the landing place of the ancient city of Melinda.† The cove is open to the N.N.E., and from the shallowness of the water in it, can never have been used except for boats. The promontory is about a quarter of a mile N.N.E., and S.S.W. by 150 yards wide; it is remarkable, being perfectly flat at the top, and about 12 feet above the sea, covered with verdure and perforated by two natural archways.†

PILLAR BANK.—From Leopard point at the north end of Melinda road, the coral bank fronts the coast northward, and surrounds the shore of Vasco de Gama's pillar to the east and north-east at the distance of a mile. The north side of the bank with an inward curve in the coast affords protection to an excellent anchorage with convenient depths, during the south-west monsoon.

The anchorage to the northward of Pillar bank and off the town of Melinda, which is of considerable size, is approached safely on a S.W. bearing, the only danger being a small shoal with 1½ fathoms water on it, lying N. by E. 1½ miles from Vasco de Gama's pillar, and three-quarters of a mile from the nearest land. The anchorage affords good shelter during the south-west monsoon; the depth decreases gradually, but it is recommended not to go into less than 6 fathoms water.‡ From the many dhows which arrive here there must be a considerable trade.

MELINDA derives it chief title to notice from the first voyage of Vasco de Gama who reached as far north as this place on his way to India in 1498. Gama describes the town as standing on a plain near the shore, surrounded with gardens, and consisting of houses neatly built of hewn stone, with handsome rooms and painted ceilings. It was at that time evidently a place of some importance. In 1605 the Portuguese, under Don Francisco d'Almeyda, took possession of the place. It is not known when and in what manner it was taken from the Portuguese; but it seems that in the beginning of the last century it was in possession of the Arabs. Nor is it known in what manner it was lost by the Arabs; but when Captain Vidal visited the place in 1824 he found that the territories of the ancient kingdom of Melinda were totally occupied by the Galla, a savage nation, which carried its conquests from the southern declivity of the Abyssinian Alps as far south as Melinda. On the site of the town Captain Vidal found nothing but ruins, and his opinion was that it was entirely destroyed by the Galla in their wars with the Arabs, who possessed most of the ports along this part of the coast.

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* *See* Admiralty plan:—Port Melinda, No. 667; scale, $m = 1\cdot5$ inch. † Owen.

‡ Sub-Lieutenant G. K. Gordon, H.M.S. *Briton*, 1873.

About half way between Melinda and Rás Gomany is a slight projection of the coast and the highest part between those places. It is sandy, with a little brushwood on its summit and shows well from seaward.

RÁS GOMANY, in lat. 3° 0′ S., long. 40° 17′ E.,* is a bold projecting peninsula visible at a distance of 20 miles, and forms the south-west extreme of Formosa bay. Nav. Sub-Lieut. George Pirie of H.M.S. *Nimble*, 1873, writes:—The bluff to the westward of the cape is very conspicuous, standing out white against the dark land. This remarkable bluff I should think on a clear day would be visible about 25 miles; we saw it at a distance of 18 miles in rather thick weather.

In the bay formed to the northward of Rás Gomany there is good shelter during the south-west monsoon, and the approach is clear.

Nav.-Lieut. E. Nankivell, H.M.S. *Daphne*, 1873, writes:—The anchorage under Rás Gomany is not particularly good, the *Daphne* anchored in 4½ fathoms low water, with Rás Gomany S.E. by S., Inner point S.W., and Sand hill point W.S.W.; and although under the lee of the point a considerable swell set in around it. The rise and fall of tide is about 14 feet.†

GOMANY RIVER is about a mile wide at the entrance opposite the village; it is fronted by numerous sand banks, and the channel for boats at low water is very intricate. There is, however, a channel at half tide for boats by keeping close along shore before arriving at the bluff eastward of the mouth of the river, and continuing so to the village. At low water several rocks uncover, and just before rounding the point on the right bank of the river, it is quite dry. A village stands on the left bank about 10 miles from its mouth, and about 12 feet water can be carried up. The breadth of the river over this distance ranges from about 1½ cables to a mile, the river is studded in places with thickly wooded islets, the banks being also densely covered with trees and jungle, with beautiful scenery.*

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* Owen.

† *See* Admiralty chart:—Juba islands to Muskat, No. 598; scale, $d = 1 \cdot 2$ inch.

FORMOSA BAY is about 30 miles wide, between Rás Gomany on the south-west, and Ozy point on the north-east, and about 14 miles deep. This large bay appears to have anchoring depths all over, but it has been only partially examined. There are some reefs in the south-western part of the bay 4 or 5 miles from shore, and from 8 to 12 miles from Rás Gomany, with depths of 7 and 8 fathoms in their vicinity.†

OZY POINT, the north-east extreme of Formosa bay, is in lat. 2° 37½′ S. Some detached reefs, called Ozy reefs, lie 4½ miles to the southward of the point, having apparently a clear passage between them and the point.

The *Nimble* in August 1873, anchored about 2 miles westward of Ozy point, under shelter of the Ozy reefs, of which latter, Nav. Sub-Lieut. Pirie writes:—These reefs consist of two separate ledges. Portions of the inside reef is always visible in the form of large rocks or islets, which are numerous, and rise from 20 to 40 feet high, and at low water there is a considerable part of it bare. The outside reef is I think always covered as at low water a tremendous surf was seen breaking outside the visible part of the inner reef. In April there were no breakers visible outside the inner reef, when the water was a great deal smoother than in August.

It was intended to leave the anchorage, at low water, by the passage between the reefs and Ozy point, but the sea was observed breaking right across and on the extensive reef of Ozy point. It was therefore thought advisable to go round westward and southward of the reefs, which was done by the eye, the sea breaking heavily for miles to the southward of the visible portion of the reefs.

Nav. Sub-Lieut. T. C. Pascoe of H.M.S. *Vulture*, in 1873, remarks that the eastern ledge is from 5 to 10 feet above high water, and extends about 5 miles southward of Ozy point. No bottom was obtained with 12 fathoms, passing at the distance of a mile along the east side of the east reef.

The description of these reefs differ; they are however extremely dangerous, and though affording fair protection, the anchorage during the south-west monsoon should be avoided in a sailing vessel; that under Rás Gomany is far preferable.

OZY RIVER runs into the sea about 5½ miles to the north-west of Ozy point. The account of this river given to Owen by the ex-Sultan of Patta is as follows:—The river is a mile wide at its entrance, but although deep inside and of great extent, it is difficult of access on account of a dangerous quicksand bar, on which there is only 4 feet at low water. Just within the bar, on the west side, stands the small town of Sanda, and 12 miles up the river the town of Kow. Above Kow there are large villages on the northern bank at every 12 or 15 miles, and at 15 days' journey in a canoe is the town of Zoobakey, beyond which the current is too strong for further progress.

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* Nav. Sub-Lieut. George Pirie, H.M.S. *Nimble*, 1871.

† *See* Admiralty plan:—Formosa bay, No. 665; scale, $m = 0{\cdot}2$ inch.

During the rainy season the river rises and inundates the surrounding country for many miles, destroying innumerable wild beasts, amongst the rest many elephants, whose bodies, as they float down the stream, are despoiled of their tusks by the natives. Fish are very abundant, also alligators and hippopotami.

Lieut. Thomas B. Lacy, H.M.S. *Nimble*, 1871, makes the following remarks on the Ozy river:—The bar at the mouth of the Ozy river dries at nearly low water, but a channel to the westward of the mouth runs in a northerly direction until close to the beach, when it turns sharp to the eastward across the mouth of the river and close to the east point of entrance. In the channel across the bar at low water, there is not more than 2 to 3 feet, but it deepens to 4 feet directly it trends up the river till where it takes the first turn; here a shoal extends from the left bank close over to the right bank, and a boat can scarcely pass. Thence the channel deepens considerably, and changes from side to side at each turn of the river. It then trends in a north-westerly direction for about 3 miles, and then about W.S.W. for 4 miles towards the sea, which could be seen through the trees; the river then turns sharp to the north straight for about 3 miles, and then to the N.W., until the town of Tula Tuala containing 500 or 600 inhabitants is reached on the left bank.

The river is about three-quarters of a mile wide at its entrance, and abreast the town from 50 to 60 yards wide; the tide is felt up to this point, and a small branch here runs into the river from the N.N.E. Both banks are thickly wooded, the river is remarkably serpentine, scarcely, with one exception just mentioned, any part running straight for a quarter of a mile.

SOUTH-WEST ROCKS.—From Ozy point north-eastward the coast becomes gradually higher and undulating as Kaneka point is approached which has a jagged appearance; when to the southward of the latter point, the land about Shella point the south-east extreme of Lamo island, seen just inside the Kaneka rock, appears like a high sandy island.

A ledge of rocks called by the natives Zewoyoo, the extent of which is not exactly known, but said to extend over a space of 1½ miles, lies about 12 miles to the north-eastward of Ozy point. These rocks range from 30 to 50 feet high, appear like dark boulders standing out from the coast, and form a good landmark.* They appear as one rock from inside the Kaneka rock, and increase on different bearings to 13 in number, the latter appearing when the rocks bear about N. by W. They rise nearly on the parallel of 2° 30′ S., and the meridian of 40° 49′ E.

Nav. Sub-Lieut. Thomas C. Pascoe, H.M.S. *Vulture*, 1873, writes:—The group consists of a number of rocks or islets from 20 to 30 feet high in a north-east and south-west direction for about half a mile. The largest islet is near the north-east end, and from the south islet a ledge runs to the southward just above water for a quarter of a mile.

KANEKA ROCK lies about 1¾ miles S. by E. ½ E. of Kaneka point, and with the entrance of Lamo harbour about N.E. ½ N. distant 7 miles. It is 35 or 40 feet high, and may be passed on either side.†

KATTO KNOLL is a coral shoal about a third of a mile in extent N.N.E. and S.S.W. with 4¼ fathoms water on it. It lies N.E. ¾ E. 4¾ miles from Kaneka rock, and about S.W. by S. 1½ miles from Rás Katto, the south-west extreme of Manda island, with the north-west point of Manda just open of Shella village. The village shut in or well open of the same point lead respectively to the eastward and westward of the shoal. The sea generally breaks on the knoll at half tide.

LAMO BAY.—The anchorage in Lamo or Lamu bay is in from 5½ to 7 fathoms, partly sheltered during the northerly monsoon, but exposed to a considerable swell during the southerly monsoon. The only dangers at the entrance of the bay being Kaneka rock and Katto knoll.† The bottom is generally foul and rocky, but the sand spit in the north-east part of the bay is without rock or stone. Lamo island, which forms the north side of the bay, has a ridge of sand hills near the shore about 40 feet high, and on the south extreme of Shella point is a small fort with a red flag.‡

The entrance to Lamo harbour is easily distinguished when approaching from the southward by the high sand hills devoid of trees which form the south side of the island, and the low south part of Manda island which is composed of dark rocks with a few trees in the background. The sand hills of Lamo are the highest and most barren of any about this part of the coast, and the difference in elevation and description of Lamo and Manda form a good mark for the entrance when bearing eastward of North.§

It is said, there is a passage for vessels drawing 9 feet, through the reefs on the west side of Lamo bay, and along the west side of Lamo island; this passage was formerly used by slave dhows.

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* Nav. Sub-Lieut. Pirie, H.M.S. *Nimble*, 1873.

† Owen.

‡ *See* Admiralty plans:—Lamo, Patta, and Kwyhoo bays, with view, No. 669; scale, *m* = 0·7 inch: and plan of Lamo bay and harbour, No. 668; scale, *m* = 1·5 inch.

§ For later information and directions for Lamu and Manda bays, *see* Appendix, pages 450–456.

The passage from Lamo to Manda bay is dry at low water for half its length, but there is about 10 feet at high water springs; at high water neaps there is not water enough for a pinnace. The passage has also narrowed by the encroachment of the mangroves.

Caution.—The depths in Lamo bay and on the bar of Lamo harbour have considerably decreased of late years. Vessels therefore taking up an anchorage should approach Shella point on a N.E. ½ N. bearing, and keep Rás Katto, the south-west extreme of Manda island, bearing northward of East, that bearing being the northern limit of the anchorage even for small vessels, nor shoal to less than 5 fathoms at low water,

Directions.—In the northern monsoon round the shore of Rás Katto at the distance of a long mile, taking care not to approach within the depth of 5 fathoms water. A small vessel should anchor with Shella point N.E. ½ N., and Rás Katto bearing northward of East, distant 1½ miles nearly from the shore of Manda, but large vessels will be better farther out.

During the southerly monsoon a vessel may pass Kaneka rock on either side, and steer for Shella point, the south-east extreme of Lamo island, altering course on nearing the anchorage, so as to bring the point on a N.E. ½ N. bearing, and anchor 2½ miles from it, in not less than 5½ fathoms at low water, with Rás Katto bearing about E. by N., distant 1½ miles or more from the shore of Manda island.

WINDS.—The north-east and south-west monsoons blow regularly along this coast, but close into the land the wind draws in during the daytime, and a land wind prevails at night. In January the wind varies from N.E. to S.E., generally fresh, though at times light, and it is usually somewhat hazy.*

LAMO HARBOUR, called by the natives Âmu (an arm), is an arm of the sea (separating Manda and Lamo islands) which forms a secure port and anchorage for small vessels, but a great part of the harbour is obstructed by shallows. The town and fort are about 2½ miles up the harbour, at the foot of a sandy ridge of hills on the east side of Lamo island. The population may be about 5,000, including Arabs and Sowahilis. There is some trade carried on in hides, orchilla, cowries, rafters, &c., and many dhows trade between this and Makalleh.

Shella at the entrance to Lamo harbour is a small fishing village. Water for boats cruising may be obtained at the north end of this village and excellent oysters from the rocks.

Bar.—The channel over the bar is narrow, and at the time of Owen's survey had 4 fathoms at low water springs, but that depth is now reduced to 2½ fathoms.

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* R. Beecroft, Master, R.N., 1825.

To cross the bar, the state of the sea should be considered, and boats should be sent to lie on the edge of the reef on either side, as there are no reliable marks nor trustworthy pilot to be obtained.*

Supplies.—Bullocks, sheep, poultry, and vegetables are abundant, also at times rice and dates.†

Water is plentiful at the well under Lamo castle, but it is rather brackish: boats may be easily filled at high water without landing the casks, but at low water they would have to be rolled over a considerable sandy flat.†

Tides.—It is high water at Lamo, full and change, at 4h. 6m.; springs rise 10 feet, neaps 8½ feet.

MANDA ISLAND separates Lamo bay from Manda bay. The coast of this island from Rás Katto to Manda head is fronted with a reef, and shallow water extends in places fully 2 miles from shore, with depths of 3 fathoms, and on which the sea has been observed to break. The sea occasionally breaks very heavily on the reef. The south-east coast of Manda is composed of sand hills of moderate elevation. The island is covered with thick jungle, and there are no wells or springs.

Nav.-Lieut. Wood, of H.M.S. *Diamond*, in 1876, writes:—The soundings between Rás Katto and Manda head are very irregular and generally 2 fathoms less than the line of soundings on chart No. 669. With the north-east Egava rock bearing N.E. byN., Manda head N.W. by W. and Kilindini point N.W. by N. ½ N., the depth is only 4¾ fathoms at low water, whilst to the north-east of this shallow there are 9 fathoms. The whole of the bottom between the bearings of Manda head N.W. by W. and Rsá Katto N.N.E. within 3 miles of the shore is foul and uneven and should only be passed over with extreme caution.

MANDA BAY.—Manda head, the eastern extreme of Manda island, is a bluff headland from which the shore trends N. by W. for 2¼ miles, and is fronted by a sand flat which extends eastward 1½ miles and forms the western boundary of the channel into Manda bay. On the north part of the flat is Manda Quanda island; the sand between it and Manda island dries at low water, and a spit extends some distance northward of Manda Quanda, the mark for clearing it being Egava rocks on with the south end of Chongoni island bearing East. The north-east side of the channel is bounded by the Outer banks, the Patta rocks, the extensive Egava flat, and Chongoni or Albatross, and other islands, which are covered with mangroves; and in the north-west corner of the bay there is an extensive reef which dries at low water. The town of Manda is in ruins, a few stone walls mark the site on the north-east point of the island, but are not visible from the sea.

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* Commander R. B. Oldfield, R.N., 1859.

† R. Beecroft, Master, R.N., 1825.

The bay has not yet been regularly surveyed ; it has excellent anchorage, and a large portion of it is deep and clear. The channel leading into it has apparently good depths, but it should be entered with caution, more especially as the tide at springs sets with considerable force in and out of the bay, and with the ebb against the wind causes a confused sea.

The river in the north-west part of the bay is generally shallow, the deepest water being along by the left bank where there is an average depth of 2½ fathoms. At 25 or 30 miles up the river is fresh, and at this distance no village on either bank.

Directions.—In entering Manda bay, the surf will probably be seen breaking on all the reefs. The best time to enter is at low water, when most of the dangers are uncovered. On either side of the channel there are outlying rocks, the positions of which have not been ascertained. The leading mark in between the reefs, is Mark island, at the head of the bay, open of Chaca Masungo, bearing N.N.W. ½ W. *See* view on plan No. 669. Anchor in 6 or 7 fathoms, off the north-east point of Manda island, with western Egava rocks E. by S., and the east point of inlet west of Kilindini point S. ¾ W.

The following remarks are by Nav. Lieut. Wood of H.M.S. *Diamond*, 1876 : — Chongoni and the group of small islands are nothing but mangroves connected at low water, and appear from seaward not as islets but as clumps of trees or mangrove bushes. Yella Manda is the only rocky islet ; it has a small rock to the right of it, as well as those to the left. To enter Manda Bay from the westward, keep Egava rocks N.N.E. ½ E. (Patta rock being on the starboard bow) until Chaca Masungo, which is low and covered with trees, and apparently the west extreme of Chongoni island, bears N.N.W. ½ W. when a gap in the trees with a small clump in the middle of it will appear a little to the right of what is apparently the west extreme of Chongoni island but which is Mark island just open of Chaca Masungo, *see* view on chart No. 669. Mark island does not open until on the above bearing and is difficult for a stranger to recognise, but when open it is unmistakable.

Steer with the above mark on, round the spit northward of Manda Quanda, keeping Egava rocks on with south end of Chongoni island, and when Kilindini point shuts in Manda Quanda anchor in 7 to 9 fathoms. The *Diamond* moored N.E. and S.W. in 7½ fathoms low water, sandy bottom, with Kilindini point S. by E. ½ E. (Manda head shut in), Egava rocks just open of the south end of Chongoni E. ¼ N., and entrance to creek S.W. ½ W. The tide on the first of the flood, at times, runs at the rate of 4 miles an hour between Yella Manda and the shoal around Manda Quanda, which renders careful steerage necessary. In leaving the bay, the leading mark should be kept on until well to the southward, so as to clear the shoal water south-east of Manda head.

PATTA BAY is bounded on the north-east by the south end of the extensive Seewy bank and reefs, on the south-west by the shoals of Albatross island and Egava flat, and to seaward by Pesarly ridge. The shore of this bay is very low and bordered with shallow water. On Manda island, alone, are some sand hills.* The soundings are 30 and 32 fathoms 5 or 6 miles outside the reefs, and 9 or 10 fathoms close to them, and more in places. Inside the reefs, near the inner edges, the general depths are from 5 to 7 fathoms over an extent of 4½ miles in a W.S.W. and E.N.E. direction by three-quarters to 1½ miles in breadth.

The PRINCIPAL DANGERS in the approach to Patta bay are as follows :—

The Outer Banks, two in number, distant rather more than 2 miles S.E. ¼ S. nearly and S.S.E. nearly, from Patta rock. There are only 2½ fathoms on each of these banks, and their position will probably be seen by the sea breaking on them.

Manda Bank, with 6 fathoms on it, lies 2 miles W. by S. ¾ S. from the Outer banks, and 3 miles S.S.W. ¼ W. from Patta rock.*

Patta Rock is nearly 2¼ miles S. ⅓ W. from the north-eastern rock of Egava ridge. It rises on Patta reef, which is a circular patch more than half a mile in diameter, steep on all sides, and having a deep channel over half a mile wide between it and Egava flat.*

Patta rock dries at low water only, but the breakers at times are heavy all over the reef ; it should, however, be approached with caution.

Egava Ridge is a rocky ledge always covered, except at each extreme, where there are some rocks always above water. The south-western Egava is nearly 2½ miles W. by S. ¼ S. from the north-eastern Egava, and the latter is 2 miles W. ¼ N. from the south-west Pesarly rock. From the north-eastern Egava, a reef extends N.E. 2 cables.*

Egava Flat.—An extensive flat, with from one to 3 fathoms water on it, projects from the south side of Egava ridge : this flat extends full 1¼ miles to the southward of the north-eastern Egava.*

The South Middle has 3 fathoms water on it, and lies about midway in the channel between the Egava and Pesarly ridges, and in line with the north-eastern Egava and south-western Pesarly rock.*

Pesarly Ridge extends N.E. by E and S.W. by W. about 1¾ miles ; some of the rocks near each end of the ridge uncover at first quarter ebb. From Pesarly ridge a flat projects about three-quarters of a mile N.W., near the extremity of which there is a one-fathom knoll.*

The North Middle is a 3½-fathom patch in the channel between Pesarly ridge and the south-west end of Seewy reef: from this patch the western extreme of the Patta cliffs bears N.W. ¾ N.*

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* Owen.

Kizingaty Island, 1¼ miles eastward of Patta town, is 2 miles in length east and west. Its southern face presents a remarkable feature, being defended by a barrier of rocks which is a little separated from the shore. A flat extends a mile southward of Kizingaty cliffs.*

Patta Cliffs are 2 miles eastward of Kizingaty island, and Patta Middle cliffs are between the two. These cliffs are similar to the description given of the south coast of Kizingaty.*

Directions.—Coming from the northward, during the north-east monsoon, Seewy reef may be coasted in from 12 to 14 fathoms water, keeping Kwyhoo peak nothing to the eastward of N.E. by N. until the western extremity of Patta cliffs opens to the southward of Seewy reef.*

To enter by North pass, observe that the North Middle patch with 3½ fathoms water on it, lies with the west extreme of Patta cliffs N.W. ¾ N. When inside North pass, steer for the eastern cliffs of Kizingaty island, until the north-eastern Egava rocks come on with the east bluff head, or sand hills, of Manda island S.W. by W. ¼ W.; then steer about W.S.W., and anchor anywhere between the flat south of Kizingaty cliffs and the north-eastern Egava rocks.* Ships whose draught of water renders it desirable to avoid the North Middle patch had better not enter this pass without sending boats to mark the channel.

South Pass.—Approaching from the southward a vessel may steer for Patta reef N.E. by N., and pass on either side of it, observing, however, that this reef is half a mile in breadth, and does not always show well, as Patta rock dries only at low water. When past Patta reef, steer for Pesarly rocks until Patta town comes open to the eastward of the north-eastern Egava rocks bearing about N.W. ¼ N.; then steer for the east end of Kizingaty, and proceed as directed when entering by North pass.*

In entering South pass, Pesarly ridge, if clearly seen, may be coasted as close as convenient, to avoid the South Middle 3-fathom patch,* but observe that the rocks of Pesarly ridge are covered at half tide. In vessels whose draught will not admit crossing the South Middle, boats should be placed to mark the edge of the shoals before entering.

PATTA TOWN is built on a mud-flat, with a boat channel through it to the town; this mud-flat is overflowed at high water. The island upon which Patta stands, and which forms the south-western side of Kwyhoo bay is bounded by hills and divided from the mainland by a narrow sandy creek, which forms a boat channel between the bays of Patta and Kwyhoo. The town is small, scattered, and miserably dirty.* Water for shipping is not to be obtained at Patta.*

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* Owen.

SEEWY BANK.—This extensive rocky bank fronting the coast between Patta and Kwyhoo bays extends over a space of about 6½ miles, leaving a passage for small vessels between it and the shore. The northern part of the bank dries at low water, and shallow water extends in places a long mile outside the bank. To avoid these dangers keep the peak of Kwyhoo island northward of a N.E. by N. bearing, and stand no nearer the bank than into 12 fathoms water.

TIDES.—It is high water in Patta bay, full and change, at 4h. 30m.; springs rise 10 feet.

KWYHOO or KWYHU BAY, to the south-west of the island of that name, is about 3 miles wide at its entrance between Boteler ledge and Seewy spit, but a great part of the mouth of the bay is obstructed by shoals, and all the north-western part of the bay which falls back upwards of 5 miles from the entrance between the reefs is shallow. The northern part is divided into two branches by the land or islands of Fazy, and a large river empties itself into the bay.*

KWYHOO ISLAND, the southernmost of the Dundas islands, may be easily distinguished by its white sandy soil, spotted with verdure, and its terminating in a low narrow point at its south-west extremity, beyond which there is a ledge of dry rocks called Boteler ledge. Kwyhoo island is faced by high sand hills, and about 2 miles from its south-west point there is a remarkable peak, about 155 feet high, in lat. 2° 0′ S., long. 41° 18′ 9″ E.*

Kwyhoo island with its peak and white sandy cliffs is the most conspicuous part of this coast, thence to port Durnford and as far north as Kiungamini island the land presents one uniform range of low hills from 40 to 60 feet high, mostly sand with slight scrub.

Kwyhoo Knoll, with 5 fathoms water on it, lies E. ⅔ S. from Kwyhoo peak, about 2¾ miles from shore.

Boteler Bank.—This shallow bank is about a mile north and south and 1½ miles east and west, with 2½ fathoms water on its southern edge; its south extreme is about 2 miles S. by W. from Boteler ledge. There are 4 fathoms water between Boteler ledge and bank, but two coral patches with 3 fathoms on them lie nearly in the centre of the channel.*

Directions.—The entrance to Kwyhoo bay is between Seewy spit on the south and Boteler bank, but the channel is obstructed to the westward of Boteler bank by the South-west patch, which has 2 and 3 fathoms on it, leaving the passage between the patch and Seewy spit about three-quarters of a mile wide.

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* Owen.

Seewy spit head (the north-east extreme of the reef of that name) lies about 2½ miles E. ½ S. from Seewy point. During the southerly monsoon vessels stopping only a short time will find the best anchorage in the south-west part of Kwyhoo bay, under the lee of Seewy spit. The chart will be found a better guide than most of the pilots to be had here.*

Anchorage.—A good berth will be found in 6 fathoms, sand, with Fazy island N. by E. ½ E.; Boteler ledge N.E. ¼ E.; and the south-west extreme of land S.W. by W. ¾ W. H.M.S. *Gorgon* anchored outside the reefs, in 8 fathoms, with Kwyhoo peak N.N.E. ¼ E.; outer rock of Boteler ledge N. ½ E., and Seewy village N.W. by W. ½ W.; but the ground outside is foul, and the *Gorgon's* cable fouled a rock, and the anchor and three lengths of cable were lost.

Water for shipping is not to be obtained at Kwyhoo.*

The JUBA or DUNDAS ISLANDS extend from lat. 2° 0′ S. nearly to the equator, the coast trending N.E. nearly straight. The islands are generally narrow, having their length parallel with the shore, from which they are rarely distant more than 2½ miles, and hence may sometimes be mistaken for the main land. The islands and rocks which are never covered with water amount to nearly 500, of which some measure from 2½ to 4¾ miles in length, but the majority are of inconsiderable size and barren, rising abruptly from, and overhanging, a narrow line of reefs. These islands are for the most part connected by reefs, but have navigable passes here and there, thus forming secure and spacious harbours for small vessels.†

Outside the islands a coral bank extends from 3 to 5 miles from the coast, with generally depths of 7 to 25 fathoms, but there are 3-fathom coral patches here and there at 2 miles or more outside the islands, which render the approach to the coast dangerous for large vessels.

Considering the difficulties attending the navigation of this archipelago during the southerly monsoon, it is a fortunate circumstance that if a vessel loses her anchors she may always from the direction of the wind lie clear off the shore. In the whole extent of these islands and rocks, a distance of 134 miles, there is but one port (Durnford river or Mto Bubashi), where a large vessel can enter nearly at all times of tide.*

With the exception of two or three places, we have scarcely any information to give about this part of the coast. Vessels proceeding along without requiring to touch anywhere, will avoid all danger by keeping off the bank of soundings, and those proceeding to any of the islands or ports must be guided by the chart and a careful look-out.

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* Owen.

† *See* Admiralty chart:—Kwyhoo bay to Juba, including the Juba or Dundas islands, No. 670; scale, $m = 0 \cdot 5$ inch.

KIUNGAMINI ISLAND (north end) is in lat. 1° 45′ 30″ S., long. 41° 30′ 50″ E.* This island called by Owen Simambaya is similar in appearance to the other islands; the main land shows itself over them in two ranges of hill, moderately high, and very regular. Rocks extend nearly three-quarters of a mile seaward from Kiungamini. H.M.S. *Barracouta* anchored in 12 fathoms about 1¼ miles from the village; the bottom was a mixture of coral, blue mud, and small cowries.† Simambaya island is that marked Arlett in Owen's chart.

DICKS HEAD (lat. 1° 39′ S.) is a low rocky promontory with a slight elevation in the centre, on the south side of which there is a red sandy patch; the rocky face when seen from the eastward appears to have an opening or very narrow sandy cove in the centre. The islets to the south-west are low, flat, and bluff.

CASTLE POINT, an islet in lat. 1° 37′ S., is remarkable, having, as its name implies, the appearance of a castle. The only landing place on this island is on the south-west side in a small sandy cove. There are no trees or shrubs of any kind on Castle island.

Some white tombs are visible close to the beach at the back of the first chain of islets north of Castle island.

Another islet in lat. about 1° 34′ S., has still more the appearance of a castle, and is a mark well known to coasters.

Current.—In the vicinity of Castle point during the north-east monsoon, the north-easterly and south-westerly currents generally meet and produce a current to the south-eastward;‡ the limits of the place of meeting must, however, depend on the state of the monsoon and other circumstances.

FAIR POINT or HEAD is a bold round-topped rocky hill rising from the sandy beach; it is the most conspicuous object, with the exception of Rozier hill, between Dicks head and port Durnford; when seen from the southward it appears like an island.

Just south of Fair point are some white sandy patches which show well from seaward in the afternoon; and just north of Fair point is a short range of hummocky rocks, 100 feet high, close to the beach.

The islets lying about a mile south-west of Fair point are low and flat, with bluff sides.

SHERWOOD POINT (lat. 1° 30′ S.) is low and rocky to seaward, with a slight hillock rising from a flat top; the longest side of the hillock is to the southward. The point is not conspicuous unless the vessel be passing close along the land.

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* Owen. † R. Beecroft Master R.N., 1825. ‡ Commander Wilson, R.N., 1863.

ROZIER HILL is the best distant mark on this part of the coast; it is flat-topped, with a bluff north side, and sloping south side, and shows above or over the coast range of hills.

To the southward of the hill in about lat. 1° 23′ S. is a hill on a projection of the land, which has a ridge of cliffs just below its summit; it shows best when bearing N.W.

ROZIER BANK,—1½ miles in extent S.W. by W. and N.E. by E., has 3 fathoms water on it, and lies 2 miles from shore, and its north end about 8 miles south-westward of port Durnford.

MOUNT BARRETI.—The coast between Rozier hill and mount Barreti becomes more barren, many sand patches showing along the low coast range. Mount Barreti when seen from the southward has a slight dip in the centre of its summit.

PORT DURNFORD (MTO BUBASHI) is a well sheltered harbour formed by the mouth of the river of that name; when inside there are anchorage depths for any sized vessels, extending several miles. The country around the river seems capable of the highest cultivation, the soil varying from light red to a dark fine earth. Port Durnford has the appearance of a healthy place if any part of the east coast of Africa can be so called. There are but two villages on the south shore; the natives of these villages did not appear well disposed at the time of Owen's survey.*

In April 1875, the boats of the *Daphne* ascended the river for 20 miles, but only one village and one canoe was seen.

FOOT POINT.—On the north-east side of the entrance, is the hilly peninsula of Boorgal, the south-west extreme of which, called Foot point, is in lat. 1° 13′ 12″ S., long. 41° 53′ 15″ E.† A ledge of rocks with a coral islet on it extends S.S.W. from Foot point.

Bar.—The entrance is between Foot and Hood ledges, the latter being a ledge of rocks, and a coral islet near the extremity of the reef which projects from the western shore. About one third of a mile inside the ledges is the bar, which extends southward from Nott sand head on the north, and has 3½ fathoms on it, at low water springs. There is a 2-fathom patch about half a mile inside the bar; it should be left on the starboard hand going in.

Sand heads.—Nott sand head extends from the north-eastern shore more than half a mile, and is half a mile westward of Foot point. Joyce sand head, extending eastward from the west shore, is about a mile westward of Foot point. Both these sand heads dry at low water springs.

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* *See* Admiralty plan:—Port Durnford, No. 671; scale, *m* = 1·2 inch.

† Owen.

Directions.—Steer in between the ledges on about a N.W. by W. ½ W. course, and after crossing the bar bring Henderson point (the farthest point seen on the western shore), on with Deep water point (which is on the eastern shore), bearing about N.N.W. ¾ W.; this mark clears the 2-fathom knoll. When Joyce island bears West, a vessel will be past the knoll, and may steer mid-channel. Hood ledge is not clearly made out till well up towards Foot point owing to its dark rocky appearance.*

During the south-east monsoon, it is probably difficult to get out of port Durnford in a sailing vessel, as the wind blows nearly right in, and there is a heavy swell.†

Tides.—It is high water, full and change, at port Durnford, at 4h. 45m.; springs rise 12 feet. The tides run strong.

Port Foot, between Foot point and Nott sand head, on the north side of entrance to Durnford river, is a snug little anchorage for small vessels during the northern monsoon.

JOHNES or TANDRAA ISLAND (lat. 1° 10′ S.) has a long sandy beach on its south-east side. The main land at the backof Johnes bay is thickly wooded with large trees. At 3 miles northward of Johnes island the coast range of hills suddenly drops into a plain which extends as far as Tula river.

PORT JOHNES is a deep bay to the northward of Boorgal peninsula. The entrance is between the islets off the north-east end of that peninsula and Johnes island, and has only 3½ fathoms water, and a great part of the bay inside is shallow. It is, however, a commodious harbour for coasting vessels.‡

There is a coral patch with only 2 fathoms water on it, lying E. by S., about a mile from the north-east point of Boorgal peninsular.

DARAKAS ISLAND, or Abookabash of former charts, is hilly, and higher on the north end than on the south. The east side of the southern hill is barren and sandy.

Bluff Hill is a dip in the plain before mentioned, and is difficult to distinguish. Rising from the plain there is a large square flat-topped rock which is conspicuous from seaward; in line with the south end of Darakas island it bears W. ¼ N.

PORT TULA.—The anchorage called port Tula is northward of Vidal ledge, in 3 fathoms water, gravel and sand, with the west extreme of Tula island bearing N.E. ¼ N., Small rock off the south end of Tula islands

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* Nav. Sub-Lieut. E. H. Richards, H.M.S. *Magpie*, 1872.

† R. Beecroft, Master, R.N., 1825, and J. Cole, Master, R.N., 1862.

‡ Owen.

E.S.E., east extreme of Vidal ledge S. by W. ¼ W., and entrance to Tula river N.W. ⅝ W. There is also limited anchorage off the village of Tula, in 2 fathoms at low water. The tides here are strong. The approach to Tula river (Mto Umborini) is shallow with irregular soundings; a narrow channel leads to the river along by the north coast bank, but the sands shift. Within the river the water is deep.

TULA ISLAND has numerous sand hills along its whole extent, and will be best known by a solitary palm tree near the north end. The village on the west side of the island in lat. 1° 0′ S., long. 42° 2′ 20″ E.* is a place of resort for dhows, where they water on their way north during the south-west monsoon.

PORT SHAMBA.—There is a pass into port Shamba south of Zigardi island, but a bank with only 3 fathoms water, rises abruptly in the centre with 6 and 8 fathoms, just inside it; after passing the bank soundings of not less than 4 fathoms were obtained by H.M.S. *Vulture*. Between Zigardi and the islet to the westward there is deep water. The pass between Zigardi and Thoala island has only 9 feet in it at low water springs; the sea breaks right across during a moderate swell.

Port Shamba abounds in fish.

THOALA or TOVAI ISLAND is high, with barren sandy hills, the most conspicuous being near the south end, where there are several low rocky islets off a high sandy beach. The north point of this island is in lat. 0° 50′ 30″ S., long. 42° 11′ 10″ E.*

Nav. Lieut. C. H. S. Douglas, H.M.S. *Vestal*, 1876, writes:—Anchored in 7½ fathoms, off Thoala island, distant about 7 miles. Sent boats to sound, and found a few patches with 6 fathoms on them: it is probable that many banks not marked on the chart exist for a distance of 9 or 10 miles outside the Juba islands, though in the daytime the positions of these shallows are generally indicated by the colour of the water, and should always be avoided. Probably 5 fathoms would be the least water that would be found on any of these shallows.

Shamba River (Mto Tovai), inside Tovai island, is deep within but its entrance is shallow.*

Thenina Island is moderately high and of a brown colour.

KWAYAMA ISLAND, Kismayo of former charts, the north point of which is in lat. 0° 37′ 15″ S., long. 42° 21′ 10″ E.* On the west side of the island there are three white patches but not visible from seaward. The village is on the north-west side.†

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* Owen.

† Nav. Lieut. J. R. Quinn, H.M.S. *Columbine*, 1871, states, that the proper name of this island is Kiama, and the island next south is known by the natives as Little Kiama. Kismayo is a large village on the main land, some miles above this so-called Kismayo island.

There is a pass on either side of Kwayama island leading into anchorages; one to the northward, and the other to the southward called port Kwayama. The pass to port Kwayama is close to the southern end of Kwaymaya island, with from 4 to 6 fathoms water between it and Doubt rock, leading into a spacious bay where vessels may anchor in 4 or 5 fathoms under Kwayamo island, or inside the rocky islets off the north point of Kiama island (Vuma). This anchorage, by Owen's survey, appears to be the best for moderate size vessels of any to the northward of port Durnford; but though the anchorage between the island and main is very good, there may be many dangers unknown, a reef of rocks and coral skirts the whole length of the island on the east side and far to the southward of the two rocks shown on the chart, which are part of it. A reef also extends to the N.N.E. from Doubt rock, and the passage is not more than 1½ cables wide.*

Caution.—If about to enter port Kwayama Owen's Kiama observe that there is a coral bank of 2 and 2½ fathoms about a mile S.E. of Doubt rock; and another patch with 2½ fathoms on it, between the rock and south end of Kwayama.

The shoals and reefs between Kwayama island and Juba river are classed by the Arabs under the name of Huma ul Hawaween, and are considered by them to be very dangerous.

DÆDALUS SHOALS consist of several patches, one of which is in lat. 0° 24½′ S., long. 42° 35′ 25″ E.† There are several shoal patches with from 3 to 5 fathoms water on them, from about 3 miles northward to nearly 1½ miles southward of the above position. These dangers lie from 2½ to 3 miles off cape Bissell and the islands of the same name, and there may be other shoals than those marked in the chart and less water on the coral heads.

H.M.S. *Dædalus*, in standing out from the shore in 1798, after getting 16, 10, 6, and 4 fathoms, struck heavily on one of these shoals; the swell being heavy lifted her over the rocks into 14 fathoms water. Vessels should approach all this part of the coast with the utmost caution; heavy breakers will probably be seen on the outer reefs, but a wide berth should be given to the coast.

The coast abreast of the Dædalus shoals is low, with sand hills facing the sea in many places, and the surf runs high upon the shore, except where it is sheltered by islands or projecting headlands.†

Blanket Island is a low flat-topped island with some islets of the same shape and height to the north-west of it.

Smee rocks, three in number, are nearly as high as Blanket island (about 40 feet), but are of a lighter colour, and the summits are dome shaped instead of flat.

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* Nav. Lieut. Quinn, H.M.S. *Columbine*, March, 1871.

† Owen.

BLANKET SHOAL, with from 2 to 4 fathoms on it, is about 2 miles in extent east and west, and more than a mile north and south. It lies in an E. by N. ½ N. direction from the Blanket islands and its outer edge is 3¼ miles distant. The sea breaks in places at low water.

KISIMAYU or REFUGE BAY.—There are many shoal patches in the bay, for which the chart, a good look out from aloft, and the eye will be the best guide. Kisimayu village and fort are on the north side of the bay; the fort is garrisoned by soldiers belonging to the Sultan of Zanzibar, and is not easily seen from seaward, and the houses are behind a rise in the ground so that the roofs only are visible, even from the anchorage. The land about here is difficult to recognise until close in as the islands are blended with the main land. The Somalis are one of the few coast tribes who do not eat fish, the result of which is they seldom go afloat, and their canoes are wretched and scarce.*

H.M.S. *Vestal* anchored about a mile off the village, in 3½ fathoms, with Pillar rock bearing W. by S., south point of Fawatu S.S.E. ¾ E., and south point of Bissel island E. by S. ¼ S. In proceeding in, a boat should be sent ahead to sound, the depths are irregular from 3½ to 5 fathoms. In January 1876, the natives were not inclined at first to be friendly, in consequence of a misunderstanding with the Egyptians (in the latter par tof 1875), but several chiefs were induced to visit the *Vestal*, and they became tolerably friendly.*

H.M.S. *Thetis* visited Kisimayu bay in the same month. Capt. Thos. Le H. Ward, writes:—The anchorage is a fairly good one, the north part of it being well protected by Bissel island and rock from north-east winds. The *Thetis* entered the bay between Bissel rock and the 1¾-fathoms patch to the south of it, but this passage is not recommended, being narrow, and only 3 fathoms water was subsequently found in it. The vessel came out with the last of the flood, to the southward of the 1¾-fathoms patch.†

The *Thetis* remained in the bay from the 23rd to 28th January 1876 with two anchors down in 6 fathoms water, coarse sand, with Pillar rock W. ¾ N., Fort flag N. by E. ¾ E., and south extreme of Bissel island E. ¾ S. The wind was fresh from East and E.N.E., and occasionally almost amounting to a gale. A considerable swell always finds its way to the anchorage, though it is entirely protected by the land from the prevailing winds at this season. The climate is at present far preferable to that of Zanzibar,. the nights being almost cool and the air at all times dry.

Fevers are said to be unknown. In the immediate vicinity of the bay, there is a great dearth of vegetation, which perhaps may contribute to its healthiness; but its salubrious character is by no means confined to the sand hills around; for at the Juba river, where the land is excellent and vegetation abundant, it is also said to be free from fever. The Somalis supplied us with bullocks at a cheap rate, and sheep were obtainable of much better quality than at Zanzibar.

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* Nav. Lieut. C. H. S. Douglas, R.N.

† For later information and directions for Kisimayu (Refuge bay). *See* appendix, pages 456–460.

Supplies.—Cattle are plentiful and may be obtained at reasonable prices, and there is a sandy beach inside cape Bissel, where some good hauls may be had with the sein; water is bad and scarce. There is a small trade carried on with the natives in hides.

Bissel Island, called by the natives Kisimayu, is about 150 feet high, bluff towards the south end, with a little pointed hillock on the extreme south point; the island slopes to the northward and is void of vegetation. It is conspicuous from the southward after passing Kwayama island.

Pillar Rock, in the north-west part of Refuge bay, is remarkable, and its appearance from the southward has been described like a vessel under sail. Nav. Lieut. R. W. Middleton, of H.M.S. *Flying Fish*, 1876, says:—It is most conspicuous, being a pinnacle about 50 feet high, of dark stone, and although only about a cable from the shore, it shows out plainly against the light-coloured soil of the hills behind it, and if the sun is to the eastward of the meridian it will probably be recognised before any of the surrounding land-marks, should the bearing not place it behind the outlying islands.

There are two beacons on the coast in the rear of Pillar rock, erected by the Egyptians in 1875, but we are not aware what they were intended for.

Dangers.—A shoal with 3 fathoms water on it, was passed over by H.M.S. *Vulture* 3 miles eastward of cape Bissel in May 1874. From the shoal, Mears Tomb bears N. 52° W., the south extreme of Bissel island S. 83° W., and the east extreme of Blanket island S. 62° W. A quarter of a mile northward of this shoal is a patch which breaks at low water.

The whole of the ground northward of Dædalus shoal appears very uneven, so that great caution is requisite in approaching Refuge bay; boats should, if possible, be kept ahead sounding. The southern entrance of Refuge bay should never be attempted, as though a clear channel is shown on the chart, the whole space is said to be a mass of shoals.

The *Thetis* came out of the bay in the following route:—Bring Blanket north islet open half its length west of Blanket island about S.W., and steer with this mark on until Pillar rock bears N.N.W.; then keep the Pillar on that bearing and steer S.S.E. until Mears Tomb comes open east of Bissel island and rock. Then steer E. by N. ¼ N. until Pillar rock is in line with Bissel rock N.W. by W. ¼ W., which leads out southward of Dædalus knoll and between it and the 4-fathom patch. The bottom is very uneven, and no vessel of large draught should enter or leave except at high water.*

MEARS TOMB ROCKS.—The southern is the largest, and has a dip in the centre which gives it the appearance of two rocks when first seen from the eastward; the north rock has several small rocks around it which always show. These rocks will not be seen coming from the southward until Blanket island is nearly abeam.

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* Nav. Lieut. H. D. Walker.

Mount Murder is a small peaked hill in a dip in the land, not being higher than the coast range; it is not conspicuous until bearing westward of N.N.W.*

JUBA RIVER, also called Rio dos Fuegos or Rogues, and by the natives Mto Ya Vumbu, does not show well from seaward; but the town and river may be recognised by a thick wood, the country round about it remarkably sterile. The entrance of the river is in lat. 0° 14′ 30″ S., long. 42° 38′ 50″ E.† H.M.S. *Barracouta* anchored off the river, in 9 fathoms water, and found 5 fathoms, at three-quarters of a mile from the entrance. The bank of soundings does not extend more than 4 miles from the shore, and has 30 fathoms near its outer edge.

During the stay of the *Thetis* at Kisimayu, Capt. Ward visited the Juba river, and states:—From what I observed and was able to gather from the Somalis and Arabs, the river is navigable for a considerable distance into the interior. The bar at the entrance is shoal and dangerous at all times of the year; it was quite impracticable for ship's boats at the time of our visit. The banks of the river abound with large game of a great variety.

The Bar appears to be only deep enough for small vessels, and to be frequently bad for boats, a heavy swell breaking on it. At the time of the *Barracouta's* visit during the survey, they could neither enter the river nor effect a landing on the beach.

Juba Town is at the first turn of the river, 1¼ miles from the entrance. It stands on a moderately high hill, is somewhat large, well-populated, and surrounded by a clay wall 10 or 12 feet high, the hills in its vicinity being of a deep red. The natives here were formerly not to be trusted. H.M.S. *Leopard*, in 1798, lost a lieutenant and the greater part of a boat's crew, who, after being swamped in crossing the bar, were all massacred but two, who were retained as prisoners until a ransom was paid for their release. The crew of a boat belonging to H.M.S. *Dædalus* was attacked the same day; some of the men, who escaped along the beach to the southward, were taken off by one of the *Dædalus'* boats from Refuge bay; and it was when standing out from there that she struck on the knoll named after her.

Tides.—It is high water at Juba, full and change, about 4h. 30m.; springs rise 9 or 10 feet.

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* Nav. Sub Lieut. T. C. Pascoe, H.M.S. *Vulture*, 1874.

† Owen.

CHAPTER X.

THE EQUATOR TO CAPE GUARDAFUI.

VARIATION in 1878:—

Meurka	6° 10′ W.	Rás Mabber	3° 0′ W.
Warsheik	5° 0′ W.	Cape Guardafui	2° 10′ W.
Rás Assoad	4° 10′ W.		

COAST.—From the equator to the second or third degree of north latitude the coast is composed of reddish sand downs, covered here and there with stunted bush, but the sand hills are more often bare. This part of the coast is free from outlying dangers and has soundings off it.*

From Juba river to Brava, the coast trends in a nearly straight line N.E. ½ E. about 117 miles. It is usually rather low and sandy, backed by immense sand hills, with a high surf beating against the shore, but may be approached with safety, and 9 or 10 fathoms will generally be found at half a mile from shore.†

Between Juba river and Red Sand hills, about 30 miles to the north-east, there are only 6 and 7 fathoms water, 2 miles from the shore. The shoalest water is off the little promontories which here and there project from the regular line of coast for about half a mile. In August 1873, few inhabitants but large herds of cattle were seen all along this part of the coast.

H.M.S. *Wasp* anchored in 16 fathoms, within half a mile of a coral reef about 40 miles southward of Brava. The reef is said to be from 1½ to 2 miles from the coast.‡

BRAVA.—The town of this name, in lat. 1° 6′ 45″ N., long. 44° 3′ 25″ E.,§ is not so large or in as good repair as Magadoxa. It is built on an eminence of about 100 feet high, close to the beach. The land at the back of the town is high; the whole slope of the hill has a reddish appearance, by which it may be easily recognised, and is spotted with dark clumps of brushwood. But to the left or westward of the town the hills are of white sand with slight vegetation on them about a quarter the way down. The roadstead off the town is open and exposed, with generally a heavy swell, even in fine weather. The Barretté and other rocks and islets front the town at a short distance from the beach, but notwithstanding the shelter they afford, dry landing is generally difficult. Dhows lie sheltered within these rocks.*

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* Vicomte de Langle, 1862. † R. Beecroft, Master, R.N., 1825.

‡ Capt. W. Bowden, H.M.S. *Wasp*, 1865. § Owen.

The natives of Brava are very friendly now, though they were not so a few years ago : they are a warlike and almost independent tribe, and have successfully resisted several expeditions sent from the Sultan of Zanzibar to chastise them.†

Supplies.—Cattle and other supplies in small quantities can be obtained, but no wood.† Dolphin may be caught on the edge of the bank. The trade is in hides and orchilla weed.

Water may be obtained in fair quantities : the best place for watering is about 2 cables to the northward of Manara tower ; the water here, although of a slightly brackish taste, is good for use. Brava is the last watering place for dhows when proceeding northward.†

Anchorage.—The bank of soundings is distinctly marked by the change in the colour of the water, the deep ocean blue suddenly changing to green, and farther in shore as suddenly to dirty yellow. H.M.S. *Gorgon* anchored in 12½ fathoms within the edge of the yellowish water. The bank appeared to be rather steep and the holding ground (gravel) not very good. The current at the *Gorgon's* anchorage set to the north-eastward 1½ knots.‡ During the north-east monsoon a vessel may anchor half a mile to the south-westward of Manara tower, and be better sheltered than in the usual roads.§

The *Daphne* anchored—in August—in 12½ fathoms, with Manara tower bearing W. ½ N., and the east extreme of Barretté rocks N.N.E. ½ E. It is a wild anchorage, the ship rolling 20 degrees, the current preventing her lying head to the swell, but the holding ground, practically speaking, is good, though I should recommend a second anchor to be dropped under foot. The edge of the green water appeared about a quarter of a mile outside the ship. The edge of the yellow muddy water was at times outside and at times inside the line of our anchorage.

During the south-west monsoon it is impossible to lie here.

Manara Tower, on the islet or promontory of Manara, is about 1¼ miles to the southward of the town. It is an ancient tower about 45 feet high, and appears to have been formerly used for a lighthouse. It may be seen at a distance of 10 miles or more, and is the more conspicuous as the hill side at the back of it is of white sand.*

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* *See* plan :—Brava, No. 672 ; scale, *m* = 2·9 inches.

† Commander J. C. Wilson, R.N., 1861 ; and Nav. Lieut. E. Nankivell, 1875.

‡ Commander Wilson, R.N., 1861. § French Survey, 1848.

Tides.—It is high water at Brava, full and change, at 4h. 30m.; springs rise 8 feet. The current in the roads follows the direction of the coast, running N.E. or S.W., according to the monsoon, with variable strength.

Nav. Lieut. H. E. Wood, H.M.S. *Diamond*, 1876, writes:—On the night of the 8th December, the ship was set during the night whilst hove to 36 miles W. ½ N. nearly direct on to the land, which at daylight was distant only 5 or 6 miles, when it was almost calm, and the ship then drifting W.N.W. towards the shore, at the rate of 2 miles an hour. Steam had to be got up. The current which affected the vessel after daylight was apparently a surface current, as the line on the in-shore side of the ship, after the lead had descended 4 or 5 fathoms, led directly under the bottom. As the ship neared the shore the drift appeared to turn more to the southward, and close in would probably have been to the south-west parallel to the coast. The part of the coast was in 1° 20′ N., or about 22 miles to the north-east of Brava, and is apparently clear of danger, there being no bottom with 50 fathoms, 3 and 4 miles off-shore.

Anchorage.—H.M.S. *Columbine* anchored in 8 fathoms, fine dark sand, 1½ miles off a point, 10 miles northward of Brava. The point projects in a south-west direction for about half a mile, but affords no shelter not even for landing. The ship rode easily with 50 fathoms of cable, though the heavy swell caused her to roll much. The junction of the blue and shallow water is most remarkable. From this point to Brava the land falls back, forming a deep bay, in which there are several dangerous rocky patches, some extending as far as 3½ miles from the shore.

COAST.—From Brava the coast extends N.E. by E. ½ E., about 96 miles to Magadoxa: it is generally bold of approach to a mile, sterile, sandy, and destitute of trees, with a few rocks close to the shore in some parts. The breaker north-east of Brava lies well off shore and parts of the reef uncover.* There are other dangerous reefs near the shore, to avoid which vessels should not approach the coast within the depth of 20 fathoms. Along this part of the coast are the towns or villages of Terra, Mongooya, Meurka, Jillip, Horcaly, Deman, and Gezerat, but the only places hereabouts which keep up any communication with the interior are Brava, Meurka, and Magádoxa.

Terra—according to Owen, in lat. 1° 26′ N., long. 44° 21′ 10″ E.—is a compact village of huts on a sloping headland across the neck of which is a stockade, and near the extremity an oval cattle pen, which is conspicuous. There are 8 fathoms water, at half a mile off the point. To the south-west of the point there is a detached rock uncovered; it is probable there would be fair landing here in the N.E. monsoon.*

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* Commander J. C. Wilson, R.N., 1861; and Nav. Lieut. E. Nankivell, 1875.

Nav. Lieut. Quinn, in 1871, says:—The town of Terra stands on the southern part of a rise in the land, between a widely-extended patch of red sand to the north, and a smaller patch of white sand to the south. It may be further known by a hill of red sand and brushwood to the southward, and by a long patch of black rocks on the beach about 30 feet high. The town is of moderate size, and surrounded by a wall which encloses it on the land side. There is a remarkable horse-shoe shaped gap at the north end of the town.

Mongooya is a straggling village of huts in twos and threes, and would not be seen from a vessel unless close in. From Terra to Mongooya the shore is fronted by a reef nearly all the way, inside which is smooth water, but apparently shallow.*

MEURKA or Marka, in lat. 1° 42′ 5″ N., long. 44° 53′ 50″ E.,† is a large walled town of a far more flourishing and imposing appearance than either Brava or Magadoxa, with a considerable trade in hides, ivory, and gum copal. There are generally many dhows inside the reefs. The natives are not very friendly towards Europeans.‡

A reef and shallow water, with from one to 2 fathoms, and in places less, extends about half a mile from shore, and detached patches with 3¼ fathoms on them lie nearly three-quarters of a mile off; the southernmost of these patches bears E.S.E. from the south extreme of the town: outside and to the southward of these patches the soundings deepen rapidly. To the southward of the town the shore should not be approached nearer than three-quarters of a mile, as there are only 1½ fathoms water, at a long half mile from the shore.†

Supplies.—Sheep, fowls, eggs, and water can be obtained: wood is scarce.

The Anchorage is unsheltered, and much contracted in space, owing to the steepness of the bank. Large vessels may anchor in 15 fathoms, with the town bearing N.W. by W. about a mile distant, but the bottom is sand and coral, and communication with the shore difficult.†

There is a dhow anchorage close to the south-westward of the town, the entrance of which has 3 or 4 fathoms between the reefs; here they lie sheltered by the reef at low water, but at high water the swell rolls in over the reef without breaking, causing a heavy surf on the beach which does not occur at low water; landing is then frequently impracticable.* In November, when the monsoon changes and north-easterly winds prevail, a vessel of light draught can lie at the dhow anchorage; the expense of loading will then be less.†

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* Nav. Lieut. Nankivell. † French Survey, 1847. ‡ Mr. Cook, 1838.

Tides.—It is high water at Meurka, full and change, at 4h. 30m.; springs rise 8 feet. The current generally follows the direction of the coast, according to the prevailing monsoon; its rate is very variable; when the wind freshens, it rapidly acquires a velocity of 2 or 3 knots.*

MAGADOXA.—This town (pronounced Magadoza), otherwise called Mukdeesha, is in lat. 2° 1′ 50″ N., long. 45° 24′ 40″ E.‡ It may be observed from a considerable distance when approached from either direction, as it stands about 40 feet above the sandy plain. The town is divided into two distinct parts,—one called Hamarween, and the other Shangani, the latter of which may be called "the city of the dead," being entirely composed of tombs. Hamarween is a large walled town, with nearly 150 stone houses, built in the Spanish style, so as to enclose a large area, but the streets are narrow and filthy.§

With reference to the names of the two districts, Commander Blomfield, R.N., writes:—There appears to be some error in the positions of Hamarween and Shangani. The western portion of the town is that called Hamarween by the natives, and was originally the Portuguese settlement, now surrounded by Arab houses, and a few inscriptions only remaining to show the former residence of the Portuguese. This portion of the town, although when seen from sea has quite as imposing an appearance as the more modern and eastern one of Shangani, is quite deserted and falling into ruins. Formerly there were two towers: the northern one, which stood on an eminence, has been down for many years; the southern one is still standing in the midst of Magadoxa.‖ This latter tower can be seen from a distance of 15 miles.¶

Like most Somali towns they seems to have no chief at Magadoxa whose authority is at all absolute, and the natives, although friendly enough as regards commerce, do not seem to be sure enough of one another to advise a European to land without suitable escort. All the towns on this coast including Warsheik, fly the flag of the Sultan of Zanzibar; this flag is hauled down on the decease of the Sultan, and a new flag is sent on the accession of another Sultan, whose authority is not acknowledged until he sends a flag. The jurisdiction of the latter does not seem to extend beyond the actual port, the chiefs of the Somalis being subject to the authority of the Sultan in the interior, who resides about 30 or 40 miles from Meurka.

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* French Survey, 1847.

† *See* Admiralty plans:—Meurka anchorage and view, No. 671; scale, $m = 2 \cdot 0$ inches: and Magadoxa, No. 672; scale, $m = 2 \cdot 5$ inches and chart of Indian ocean, No. 748b.

‡ Owen.

§ Mr. Cook, 1838.

‖ Whether the origin of the name Magadoxa is Portuguese (pronounced by that nation Magadosha), as is probable, and the Somali name Mugdeesha a corruption of it, or whether the latter is the original name, no one appears to know. There is now no white man whatever living in the place or its neighbourhood, and it would be more convenient to adopt the name Mugdeesha, the many different pronunciations of Magadoxa being for the most part unintelligible to the natives.—R. M. Blomfield, Commander H.M.S. *Teazer*, 1871.

¶ Commander J. C. Wilson, R.N., 1861.

The old disused lighthouse, which appears as a sort of beacon, is of considerable elevation, and stands on the beach close to the water, a short mile to the north-east of the tower of Magadoxa, having a white sandy background, which clear of all buildings renders the tower very conspicuous at a distance, and especially at night, when the other cannot be distinguished being in the midst of the buildings of the town.

A large white house like a palace stands to the west of the new town, and can be seen for many miles. On the beach to the west, near where Shangani is marked on the chart, there are a great number of large loose boulders, which with the naked eye at a distance of 2 miles appear like huts.*

Anchorage.—The roadstead is open and exposed: vessels may anchor in from 11 to 14 fathoms water, fine sand, with Magadoxa tower bearing from W. by N. ½ N. to N.W. by N., about three-quarters to a mile outside the reef. The port or dhow harbour can accommodate 12 to 16 dhows in all weathers, and is formed by a narrow reef parallel to the shore, and distant from it about a quarter of a mile: this reef extends eastward upwards of 3 miles, and the sea always breaks on it. The narrow harbour within it has from 6 to 12 feet at low water springs. The entrance has 2 fathoms water, and is between the west end of the reef and the reef projecting from the shore of the town.† There is good landing inside the long reef, but the entrance may probably be dangerous for boats during fresh southerly winds.‡

Supplies.—Fresh beef, sheep, and goats are plentiful, the two latter at one dollar each, the sheep being of excellent quality: other refreshments are also to be obtained,‡ but no water for shipping can be procured in sufficient quantity. There are two watering places: one to the west of the towns, and the other, which is the best, close to the old light tower, but the water at both is brackish, and has to be scooped out of the sand. The natives were quite friendly, but they were not so a few years ago, and have the reputation of being treacherous.§

Trade.—Most of the Arab dhows visit this place in their coast navigation to exchange sugar, molasses, dates, salt fish, and arms, for ivory, hides, gums, and home-spun cloth.†

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* Nav. Lieut. Robert Jackson, R.N., H.M.S. *Lyra*, 1865.

† Owen. ‡ Commander J C. Wilson, R.N., 1861. § Mr. Cook, 1838.

Tides.—It is high water at Magadoxa, full and change, at 4h. 30m.; springs rise 8 feet.

Current.—Commander Blomfield, R.N., writes:—The current, which in the early part of November was running strong to the N.E., was in the latter part of the month setting to the westward close to the land, and at a distance of 30 or 40 miles was running with considerable strength to the S.W. I am told by an intelligent Arab dhow captain trading to Zanzibar, that the south-westerly current commences at Magadoxa almost invariably with bad weather from the N.E. about the second week in December, that it sets in the same direction at a distance from the land nearly a month earlier, which is in accordance with our experience. The S.W. current does not last above three months.

On this part of the coast the current in August has set about 3 miles an hour to the north-east, nearly parallel but inclining towards the shore. When hove to with the vessel's head to seaward, the shore has been neared, and it has been necessary to stand off for an hour or two. On the 20th August the current is recorded N. 48° E. 82 miles.*

In the route to the southward Nav. Lieut. E. Nankivell, in August 1873, remarks:—I believe that except when the monsoon is at its height, and perhaps even then, that a good steam-vessel by anchoring at night, and closely following the coast by day, would always be able to get to the southward. The winds and currents are so very variable in strength and direction, that it is at best a doubtful experiment to try to get to the southward by standing offshore; on the other hand, the inshore passage requires the most unremitting attention, and is most harrassing work.

COAST.—About 12 miles to the northward of Magadoxa a chain of hills commences, and extends some miles to the north-eastward: about this part of the coast there are two or three bays with white sand-hills. The soundings decrease suddenly from 40 to 10, 5, and 3 fathoms, and a wide berth should be given to this part of the coast, which is in general sandy, sterile, and rather low.

At about 15 miles to the north-east of Magadoxa is the beginning of a line of reefs extending parallel to the coast at a distance of 4 or 5 miles, and in places reaching nearly to Warsheik. Abreast the centre of the reef, and inshore of it, is an island, or what appears like one, of black rock, somewhat about the height of Warsheik, on which is an Arab village. Warsheik can be seen at a distance of 12 miles; some lofty stone houses on Ruin point give it at a distance the appearance of a fortress.†

WARSHEIK BANK, otherwise called Ducouëdic bank, is a dangerous shoal outside Warsheik roads, parallel to the coast, with depths of from 5 to 3¾ fathoms, sand and broken shells; the latter depth extends over a considerable part of the bank and was the least water found, but the eastern part has not been examined and may have shoaler water. The outer part of this bank is 1¾ miles from shore, and its western extremity bears S.S.E. 1⅛ miles from Pyramid isle: its extent eastward has not been ascertained.*

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* Nav. Lieut. Robert Jackson, R.N., H.M.S. *Lyra*, 1865.

† Com. Blomfield, R.N.

This is probably the shoal which the *Leven* passed over in 1825, in 3½ fathoms. Immediately to the westward of this commences another reef or shoal, which the *Leven* coasted from a quarter to half a mile distant for 18 or 20 miles, getting no bottom at 40 fathoms.

H.M.S. *Magpie*, when steering along the land, found the water suddenly shoal to 4 fathoms, verifying the position of the shoal off Warsheik as the bearing of the village at the time of shoaling was N.W. about 2½ miles. In hauling off to the eastward the soundings ranged between 4¼ and 3¼ fathoms, for nearly a mile, when the water gradually deepened to 7 and 8 fathoms, and shortly afterwards no bottom was obtained with 13 fathoms.†

Fish.—In four hours upwards of four hundred pounds of fish were caught, the average weight of each fish being about 19 lbs., by hook and line towed astern. Fresh breeze from S.W.†

The ROADSTEAD is inside the bank just described. Ruin point is in lat. 2° 19′ 45″ N., long. 45° 53′ 50″ E., from which a ledge of rocks extends W. by S. ½ S., about 2 cables, near the extremity of which is Pyramid isle, a small flat-topped islet with steep sides, and the base of a small pyramid or beacon on it. This ledge of rocks between Pyramid isle and Ruin point is awash: one small piece of rock like a boat under sail, being visible at a distance. The ledge of rocks, together with a rocky shoal with from 10 to 12 feet on it, which extends nearly 3 cables S.S.W. ½ W. from Pyramid isle, forms a dhow harbour which is completely protected from all but S.W. winds, and in November was full of dhows from Makalleh loading with Orchilla weed, of which there is a great quantity in the neighbourhood, for Zanzibar.

When the wind comes in strong there is much sea, and the entrance of the harbour is impracticable for boats.* There are 2½ fathoms over the bar and in the harbour, but this depth is not of great extent, and to the north of Pyramid isle near the ledge of rocks which form the harbour there are only a few feet.‡

On account of the numerous reefs, it is well to keep a good look out from aloft in making for the roadstead. The discoloured water generally indicates all dangers, including Warsheik bank.‡

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* French Survey, 1848.

† Nav. Sub Lieut. E. H. Richards, H.M.S. *Magpie*, May 1872.

Warsheik Village is about half a mile to the westward of Pyramid isle and appears to be thriving and well populated, and the huts giving way to stone houses.

Supplies of live stock to a limited extent are to be had with some difficulty, as the bush is three or four days' journey in the interior. Water is scarce and bad.

It is advisablo not to go far far from the boat, though the natives appear well disposed.

The Anchorage is between Warsheik bank and the village, in 16 fathoms, gray sand, and good holding ground, with Pyramid islet North, a long half mile. The *Teazer* anchored in November, in 9 fathoms water, with Pyramid islet N.E. by N., distant about half a mile. The wind was E. by N. and blew strong with rain, which raised a considerable sea and swell, but not sufficient to prevent communication with dhow harbour. This is, however, an exposed anchorage. In entering these roads, beware of the shoal ground which bears S.S.W. ¼ W. from Pyramid islet and 1¼ miles from shore, with 3¼ fathoms on it. Pyramid islet, bearing North, will lead in.

Tides.—It is high water at Warsheik, full and change, at about 4h. 30m.; springs rise about 8 feet. The current generally follows the direction of the coast, according to the prevailing monsoon; its velocity is variable, sometimes reaching 2 or 3 knots.*

WARSHEIK POINT, in lat. 2° 30′ N., long. 46° 7′ E., is fronted by a reef which projects S.S.W. ¼ W. full 3 miles from the next point north-eastward of Warsheik. To the south-west of this reef the shore is skirted by rocky reefs for nearly 9 miles.

Murot Hill, a peak northward of Warsheik, is in lat. 2° 41′ 20″ N., long. 46° 17′ 10″ E.†

TERNATE SHOAL, in lat. about 3° 15′ N., projects about 2 or 3 miles from a low point of land, which is otherwise destitute of any distinguishing marks. The ship *Ternate* nearly ran upon this shoal in 1811, having had 18 and 20 fathoms close outside it, and not observing it until the sea was seen to break.‡

Daphne Shoal, with 4 fathoms water on it, reported by H.M.S. *Daphne* in May 1875, lies (approximately) in lat. 3° 56′ N., long. 47° 40′ E.; the weather being unfavourable, no bearings could be taken to determine the position, but the shoal is said to lie at about 4 miles from the shore.

The least water obtained by the Daphne's boats was 4 fathoms (low water), but as there was only time to pull across the shoal there may probably be less. Between Daphne shoal and the mainland, soundings of 11 fathoms were obtained, and 9 fathoms at 2½ cables from the beach.

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* French Survey, 1848. † Owen. ‡ Captain Smee, 1811.

A dhow lay at anchor a cable from the shore trading with the natives who had erected temporary huts; they called the place Sharoti.*

The COAST between Ternate shoal and Rás Assoad is generally low, with soundings close to the shore. The entrance of the doubtful river Doara is supposed to be in lat. about 4° N., but no indication of a river was observed when sailing along the coast.†

RÁS ASSOAD or Black point, in lat. 4° 34′ 10″ N., long. 48° 0′ 40″ E., is a point of low black cliffs projecting from the sand hills over the beach into the sea. The land is low near it to the southward, but the elevated land of Ul Hherab lies to the northward, and may be seen at the distance of nearly 30 miles. This part of the coast is called by the Arabs Ul Hherab or "the mountainous country." ‡ There are sounding of from 20 to 30 fathoms along this portion of the coast.§

RÁS AWATH, in lat. 5° 52′ 50″ N., long. 48° 39′ 55″ E., is fronted by a reef, and lies N.E. ½ N. about 71 miles from Rás Assoad.* The coast between these headlands forms a slight concavity, and has soundings of from 20 to 40 fathoms at from 6 to 9 miles from shore.‡

COAST.—From Rás Awath some hills extend a little way to the northward, and afterwards the coast becomes low, with sand hills in places. The general trend of the land from Rás Awath to Rás al Khyle is N.N.E. ¾ E., about 146 miles; this part of the coast, which is called by the Arabs Sef Tweel or the "bald" or "declining" shore,‡ has soundings of 18 to 10 fathoms at several miles from shore, and 25 to 40 fathoms at 9 miles or more.

SOMALI COAST.—From Rás-al-Khyle, on the eastern coast, to Zeyla, near the strait of Bab-el-Mandeb, on the meridian of 47° 15′ E., the country is known by the name of Bar-e-Somál, and it is divided between two great nations, who, both tracing their origin from the Arab province of Hadramaut, are yet at bitter and endless feud with each other. The principal of these two great families is that to the eastward of Burnt island. The other extends from Burnt island, or Bander Jedíd, to the Essah tribe, who reside in the neighbourhood of Zeyla, and is divided into three great tribes, namely, the Haber Gerhajis, the Haber Awal, and the Haber-al-Jahleh (Haber meaning *the sons of*), who were the children of Isaakh, the said Isaakh having crossed from Hadramaut some time after his countrymen had founded the nation to the eastward, and settled at the town of Meyet, near Burnt island, where his tomb exists to this day.

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* Information by Nav. Lieut. Edmund Nankivell, H.M.S. *Daphne*, 1875.

† Captain Smee, 1811.

‡ Owen.

The eldest branch, the Haber Gerhajis, was put in possession of the frontier mountains to the southward; and the other two brothers were placed on either side of them, the Haber Awal establishing themselves on the low lands from Berbereh to Zeyla, and the Haber-al-Jahleh locating themselves at Karram, Enterád, Ankór, and Haïs, four small ports to the eastward of Berbereh. To the eastward of Meyet, as far as Bander Zíádeh, are the warlike tribe of the Wursúngeli, which name means *has brought good news;* (it is spelt in the chart Oor Singali, which is incorrect;) and thence to the eastward round Rás Jered Hafún, and down to Rás al Khyle, the country belongs to the numerous clans of the Mijjertheyn. These are the tribes on the coast. Although at constant war amongst themselves, they are friendly and obliging to strangers.

From Rás al Khyle to Berbereh, the Wádí Nogal extends in almost a straight line between two ranges of mountains. The *happy valley* is spoken of in the most glowing terms by the natives, and apparently forms their great road for trade; the people of Ogáhden, Murreyhan, &c. bring all their gums, ivory, and ghí along this valley, as being the safest and least fatiguing route, and the people are described as a peaceful race, who subsist chiefly by the chace, and by their sale of ostrich feathers, myrrh, and ghí or clarified butter.

RÁS AL KHYLE, also called Moro Cobir (*i.e.*, Serpent's head), is in lat. 7° 43′ 30″ N., long. 49° 45′ 40″ E.* It forms three distinct cliff points, and is the southern extreme of Negro bay.

H.M.S. *Leven*, in hauling off shore for the night, shoaled the water from 19 to 6¼ fathoms when the north point of Rás al Khyle bore S.W. by W. ½ W. about 6 miles; the water then deepened regularly to 26 fathoms on the edge of the bank, when the north point of Rás al Khyle bore W. ½ N. about 8 miles. Captain Owen's pilot, however, did not consider there was any danger on this part of the coast.

COAST.—From Rás al Khyle the coast trends about N.E. by N. 125 miles to Rás Mabber: this part of the coast is a rocky shore varying from 200 to 400 feet high, and is known to the Arabs as Hazine, or "rough ground." From this name Hazine, has arisen the corruption Ajan, Azon, and Azamea in many maps and charts, whereas the country never had any other general appellation than Barra Somali, or the land of Somali.*

There appear to be soundings all along this part of the coast at some distance from shore, until to a point about 24 miles southward of Rás Mabber, where the coast forms an indentation which is very little known, and where the soundings do not extend far from shore.

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* Owen.

RÁS MABBER, also called cape Stand-off, in lat. 9° 30′ N., long. 50° 50′ 10″ E., is fronted by a reef, and the land in its vicinity is generally low. During the southerly monsoon, there is good anchorage in 6 fathoms on the north side of the cape, where dhows at times put in for water.

The name of the cape indicates the customary practice of the Arab coasters bound to the northward during the southerly monsoon, who always stand well off from this point in order to round Rás Hafún, and so prevent being embayed in the intervening deep bight.

The COAST from Rás Mabber to the south-east point of Rás Hafún trends nearly N.E. by N. 63 miles. Soundings of from 20 to 30 fathoms appear to extend a considerable distance from shore in the bight between these capes.

RÁS HAFÚN, or "The Surrounded," is a peninsula or prominent headland, 8 miles long north and south, and 12 miles east and west, and from 400 to 600 feet in height, rising in steep cliffs from the sea, and formed of sandstone and limestone. The outer edge of the peninsula is perfectly flat and tabular, and the interior consists of undulating hills, deeply intersected by ravines, and watercourses. The south-west point of the promontory of Hafún is high and flat, like a barn, whence it is called Barn hill: at a distance it appears separated from the rest of the peninsula, the land between being low.*

Rás Hafún is connected with the mainland by a long narrow neck of white sand, shells, and mud, with a few stunted bushes thinly scattered along it, and from its being almost an island, probably takes its name of Hafún. On either side of the narrow neck of sand, are deep bays with good anchorage, according to the season. The peninsula is in the Mijjertheyn territory, and tenanted by the Aial Fatha branch of the Othman family; there are only a few miserable huts, and a population of probably 50 persons; they are friendly to strangers, and may be trusted. The water in the wells is bad. Cattle and firewood are procurable.†

Tides.—It is high water at Rás Hafún, full and change, 6h. 15m.; springs rise 4 feet.

HAFÚN SOUTH BAY is, of course, best adapted for ships during the north-east monsoon, but a change of two or three points in the direction of the wind causes a swell to roll in, and a surf to break on the beach. The bay is much frequented by the shark fishers from the Arabian coast, many of whom reside here throughout the year, merely moving their fishing boats to either side of the isthmus as the monsoon changes.

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* Lieut. Carless, I.N., 1838.

† *See* Admiralty chart:—Rás Hafún to Rás Gori, No. 100*a*; scale, *m* = 0·25 of an inch.

The soundings in the southern bay are regular, decreasing gradually towards the shore, being deeper to the westward than at the head of the bay close to the peninsula, where the best anchorage is in 6 or 7 fathoms water sand, at about 1¼ miles from shore, with the south-west point of the peninsula bearing about S.E.; but during the southerly monsoon ships must be careful not to approach this bay. Several ships have found themselves embayed here during the night, and had great difficulty in beating out, and one is said to have been lost.

To the southward of the bay there are 27 fathoms water, at a distance of 10 miles. On the south-east and east sides of the peninsula the soundings are deeper, there being 15 to 20 fathoms water close in to the cliffs, increasing to 100 fathoms, at a distance of 13 miles from the S.E. cape. The nature of the bottom is sand and rocks.

Supplies.—During the northern monsoon Arab dhows put into this bay for wood, water, and refreshments. Cattle are to be procured, also a small quantity of firewood, but the water is bad. The natives are friendly to strangers, and may be trusted.

HAFÚN NORTH BAY is clear of dangers, and affords anchorage during the southerly monsoon in 7 to 10 fathoms, hard sand, but the holding ground is not very good. Near the north-west extreme of the peninsula the shore must not be approached by large ships within 3 miles, as soundings of 3 and 4 fathoms, extend nearly that distance from the shore.

The soundings elsewhere are regular, and increase gradually from 4 to 6 fathoms close to the shore, and to 38 and 40 fathoms, at 11 miles distant. The bottom is hard white sand. There is shelter in this bay from southerly winds, but it is very doubtful whether a vessel could ride in safety throughout the S.W. monsoon, owing to the heavy swell that rolls round the point, and the violent gusts of wind blowing across the headland.* Large quantities of fish may be taken by hook and line in this bay.

Khór Hardeah.—On the north side of the isthmus of Hafún is an extensive creek, called Khór Hardeah, 2½ miles wide at its entrance, and 12 miles in depth. As an anchorage it is only available for boats, the depth of water inside being only one to 1½ fathoms. This is probably the most unhealthy spot on the Somáli coast; its shores and the bottom of the bay are covered with decomposed vegetable matter, which on being disturbed gives forth a noxious gas that is perfectly sickening; yet there are many fishermen living on the sea shore, who from long habit have become accustomed to the exhalations. There is no fresh water in the bay, but it is said by the natives that at the head of the bay, at a place called Khór Hashera, there is a stream of fresh water running into the sea. It is possible that the river mentioned in old writers as existing in the neighbourhood of Hafún, may be this stream, and Khór Hashera the ancient Opone.

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* H.M.S. *Forte*, in May 1871, anchored in 7½ fathoms, with N.W. cape bearing West, and dragged with 70 fathoms of cable out. H.M. ship *Nimble* at anchor 3 cables S.S.E. from the *Forte*, also drifted, with 60 fathoms of cable out. Wind, a moderate gale from the southward.

During the south-west monsoon, a kind of fair similar to one held at Berbereh, though smaller, is annually observed at Khór Hardeah. The merchants from Makalleh, Shehr, and from the Mijjertheyn banders to the northward and westward, attend this meeting at the end of May, when their baghalahs are hauled up on the beach ; and a brisk trade is carried on throughout the south-west monsoon, in gums, ostrich feathers, hides, ivory, and ghí; large quantities of ambergris are also brought for sale, and the price demanded is very great. Elephant hunting is followed by those who have guns. A good trade might be carried on between Mauritius and Hafún in asses ; these might be procured at Hafún in great numbers for five or six dollars each, and the voyage being so short in the north-east monsoon, would probably afford a good speculation.

The COAST from Rás Hafún to cape Guardafui, a distance of about 80 miles, trends nearly north, forming two large bays, which are separated by Rás Alí Besh Quail, a bold headland and easily recognized; between the latter and Hafún the shore of the bay is low and sandy, and thickly covered with bushes, bounded in the interior, at a distance of 3 or 4 miles, by a range of flat table hills, elevated about 700 feet above the sea, which gradually approach the sea at Rás Alí Besh Quail.

The soundings in the bay are regular, and the shore may be approached by the lead, the water shoaling generally from 100 fathoms at 15 miles to 10 and 8 fathoms at about 2 miles from the shore. The general nature of the bottom is gray sand and shells.

Water.—There appears to be a plentiful supply of water in this bay. At 5 miles to the northward of the entrance to Khór Hardeah is a lagoon called Handeh, the water of which is salt, except at the head, where it is barely drinkable. There is, however, a well of good water a few yards higher up. At Dahkabo, 8 miles north of Handeh, there is a well of good water; and 10 miles south of Rás Alí Besh Quail, in a valley formed in the table-land, there is plenty of fresh water, and the inhabitants are numerous.

Anchorage.—H.M.S. *Briton*, in September, anchored off Handeh in 5½ fathoms, about 2 miles from the shore. The natives here look for the appearance of the Pleiades in the east as indicating the decline of the S.W. monsoon.

RAS ALÍ BESH QUAIL is a prominent bluff headland, rising in a steep cliff 400 feet above the level of the sea. The soundings off it are deep, there being 20 fathoms water one mile distant, 40 fathoms 5 miles and 100 fathoms 11 miles.

GHUBBET BANNEH.—Between Rás Alí Besh Quail and Rás Jered Hafún the coast forms a deep bay called Ghubbet Banneh ; for the first 12 miles the shore is low, sandy, and thinly covered with bushes, with a range of tabular limestone mountains in the rear, elevated 2,700 feet above the sea, descending to the plain in steep precipices, and intersected by fertile valleys. To the north-westward of this range, and extending in a N.E. and S.W. direction, is a still higher range of mountains, elevated 5,000 feet above the sea, called Jebel Gorâli, which terminates on the sea at Rás Jered Hafún. Near the termination of this range of mountains, 11 miles from Rás Jered Hafún, and 3½ miles from the beach, is a quoin-shaped peak, 3,000 feet high, the bluff being to the north-eastward, which is very conspicuous, and may be seen at a great distance.

Immediately to the westward of Rás Alí Besh Quail is an extensive lagoon of salt water, called Khór Banneh. At 12 miles to the southward of Rás Jered Hafún, and close to the beach, is another lagoon of salt water, called Khór Abdahân, with fresh water in the upper part, where it is fed by a stream running from the valley.

The soundings in the bay are regular, and there is no danger ; the depths increase gradually from the shore, to 20 fathoms at from about 2 to 5 miles distance, but the 20-fathom line curves round within about a mile of both points of the bay : the 40-fathoms line is about 11 miles from the shore ; the general nature of the bottom being sand and shells off shore, and rocks close in. There is good anchorage, and shelter, from southerly winds, off the small village in the south part of the bay.*

RÁS JERED HAFÚN or Shenaríf, is a bluff limestone headland, rising abruptly from the sea in four steps to a height of 2,500 feet ; it appears black and stands out in bold relief against the sky, and is steep-to, there being 10 to 16 fathoms water close to the cliffs. From this to cape Guardafui the coast is precipitous and bold, the mountains approaching close to the sea, and the water is deep. Care should be taken in approaching this headland not to mistake it for cape Guardafui.

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* This is the best anchorage on this part of the coast, being free from the heavy squalls off the high lands. The soundings decrease rapidly off the village in Ghubbet Banneh. Do not anchor in less than 7 fathoms water.—Nav. Lieut. T. Stringer, H.M.S. *Briton*, 1872.

Wádí Tohum is a fertile valley 3½ miles north of Rás Jered Hafún, full of large mimosa trees, with a stream of water running through it. The natives resort to it in great numbers, and will bring bullocks, sheep, and firewood to the bay on the west side of Rás Aṣír. Excellent water might also be obtained from the stream, but the carriage would be expensive.

CAPE GUARDAFUI (RÁS AṢIR,) the north-eastern point of Africa, is a precipitous rocky cape, 900 feet in height, and easily known by the formation of the land in its vicinity. Between the high land of Jered Hafún and the cape, the land is irregular at the top with some low, even land underneath, which appears separated from it, and forms like double land; from hence the declivity towards the cape forms notches or steps at regular distances. The cape is steep-to, 12 fathoms being close in-shore, and the soundings extend 18 miles to the eastward, there being 125 fathoms at that distance; to the northward of the cape the bank of soundings extends off only 2½ miles.*

Approaching from the north-eastward cape Guardafui may be known by the light-coloured sand on the top and the sandy bay to the westward.† Cape Guardafui is not visible from Ras Shenarif in the south-west moosoon, its southern side being composed of gray sand hills gradually sloping to the sea.

Current.—Care is necessary in making the cape for the gulf of Aden, during the S.W. monsoon, as the current sets up the coast strong to the northward, and close round the cape to the westward; but at a short distance off shore it continues its course to the northward and eastward, and for its strength and direction, it will be well to consider the wind and sea. This current commences in the month of March, and continues during the whole of the south-west monsoon. In May, the current at the anchorage under Rás Aṣír was found to set eastward from one to 3 knots an hour.‡

Tides.—It is high water, full and change, at cape Guardafui, at about 6h. 15m.; springs rise about 6 feet. On the neaps there is no ebb tide, but on the springs it runs in the opposite direction to the current, close in shore, for four or five hours during the day.

Caution.—As many large and valuable vessels have from time to time been wrecked with loss of life on the coast to the southward of cape

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* In May 1871, H.M.S. *Forte* anchored under Rás Asír in 9 fathoms, with the cape E. ¾ N., and a high bluff S. ½ W. In September 1872, the *Briton* anchored in 8 fathoms, with the cape E. ¼ S., and the west point of the bay W. by N. ¾ N.

† Nav. Lieut. T. Stringer, H.M.S. *Briton*, 1872.

‡ H.M.S. *Tamar*, in June 1877, experienced a current setting E. by S. at the rate of 3 knots an hour, when about 50 miles south of Rás Asír, and 45 miles off shore. The *Diamond*, in the middle of August 1877, between the parallels of 7° 15′ and 10° 30′ N., was set N. 80° E. 69 miles in 24 hours. The long. on the preceding day was 51° 20′ E.

Guardafui or Rás Aşír, when bound round this headland from the south-eastward; seamen should use the utmost caution not only in making the land, but also in verifying the vessel's position by soundings, more especially at night, or during the south-west monsoon when the weather is hazy.

As soundings extend from 10 to 12 miles from the coast, the deep sea lead should be frequently used, and the vessel's course altered to N. by E. or N. by E. ½ E., or if necessary more to the eastward, immediately soundings are struck, or the land sighted in dark or hazy weather. By steering to the northward as above and by not standing into less than 35 fathoms water, the vessel's safety will be ensured, and as the water rapidly deepens northward of the parallel of the cape, the 100-fathoms line of soundings being only 2½ miles from it, there will be no difficulty as to the time when the course should be again altered to the W.N.W. During day a gradual change will probably be seen in the colour of the water from blue to dark green. Attention should also be paid to the alteration in the direction of the swell caused by the promontory of Rás Hafún. Far better to reduce speed and lose an hour now and then in ascertaining a vessel's approach to the land by the lead, than lose a valuable ship and freight, and the probable sacrifice of human life.

Supplies.—Turtle may be obtained from the natives at the anchorage under Rás Aşír at one or 1½ dollars each according to size; they may be seen occasionally round the ship. Sheep may also be purchased at 2½ or 3 dollars each, but they are small and indifferent. Fish are plentiful and good; the seine may be hauled, and the best place is off a little Somali village near the beach in a small bay: the seining party should leave the ship at 4h. 30m. a.m. or 4 p.m.; the better time is in the morning, and as many as one hundred large fish have been taken at one haul. Numerous jackal were seen every morning close down to the beach. Water is not to be obtained.*

The COAST from Rás Aşír extends 30 miles in a W.N.W. direction to Rás Alúleh, in a nearly straight line: there are some few small projecting rocky points forming small bays between, but no dangers exist. In the bay immediately to the westward of the former cape is good anchorage, and protection from southerly winds, but more to the westward the ground is rocky from the shore to the 10-fathoms line, a distance of one mile. The soundings rapidly increase in depth from 10 fathoms to the edge of the bank, which off Rás Aşír is distant 2½ miles, increasing to 6½ miles off Rás Búah, and decreasing again to 2 miles off Rás Alúleh.

The mountains, 1,300 to 1,600 feet in height, approach close to the sea, with the exception of some two or three intervening spaces, where the shore is sandy, covered with bushes. Throughout the extent of coast there appears to be no villages. At Barédi, 17 miles from Rás Aṣír, is a lagoon of salt water, on the sandy plain near the sea; and at Moyah Búah is another lagoon, and several wells of excellent water about 100 yards from the beach; and water in any quantity can be obtained by digging holes in the sand near them to a depth of 3 or 4 feet.

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* Nav. Sub-Lieut. Geo. Pirie, H.M.S. *Nimble*, May 1871.

The SOUTH-WEST MONSOON commences in the Arabian sea, about the middle or end of April, and continues to the end of September, liable to a variation of from 10 to 15 days, being sometimes earlier, sometimes later, but is not felt in its full force until May or even June; it continues in full force during the months of June, July, and August, blowing stronger and steadier, and accompanied by a heavier sea in the open sea than on the costs.

On the eastern coast of Africa the wind blows very strong from the S.S.W. and continues with full force from that quarter through the channel between the island of Soḳóṭra and Rás Aṣír (cape Guardafui), and thence across the gulf of Aden to Rás Rehmat (which signifies in Arabic the cape of Wind's Death), a cape south and west of Makalleh.

The atmosphere in the S.W. monsoon is generally very hazy, and the land consequently not visible till very close, rendering it necessary to pay great attention to the lead and to use the utmost caution. On making the coast at the N.E. point of Africa during the S.W. monsoon, the best signs of being near the land are the gradual change in the colour of the water from blue to dark green, and the alteration in the direction of the swell, caused by the prominent headland of Rás Hafún.

The NORTH-EAST MONSOON commences in the Arabian sea, about the middle of October, and prevails during the months of November, December, January, and February, after which the winds become light and variable, until the setting in of the south-west monsoon. It blows a steady moderate breeze from the north-eastward, in the open sea, with fine settled clear weather, and a smooth sea; but on the east coast of Arabia, and the coasts within the limits of the gulf of Aden, the wind is very variable.

In the gulf of Aden the N.E. monsoon commences early in November, the prevailing winds being East and E.N.E., blowing fresh at the full and change of the moon. At the end of December, or early in January, it frequently blows a moderate gale with heavy rain. In January, February, and March, easterly and east-north-easterly winds are common, increasing in strength towards the straits of Bab-el-Mandeb. The weather is generally clear and pleasant; thermometer ranging from 68° to 80° Fahrenheit; rain may sometimes fall, but not in any great quantity. These three months are the principal for trade.

CURRENTS in SOUTH-WEST MONSOON.—The currents in the Arabian sea at this season are regular in direction, their velocity depending much on the force of wind and local circumstances. The general course of the current in the middle of the sea is about East, inclining to S.E. as it nears the western coast of India; its velocity varies from half a mile to 2 miles per hour.

On the eastern coast of Africa the current sets along the coast to the N.N.E. at a velocity of 2 to 4 miles per hour, passes through the channel between Soḳóṭra and the north-east point of Africa, at a rate of 1½ to 2 miles an hour, pursuing a course northerly and easterly, until it impinges on the Arabian coast about Ḳoṣaïr, whence it takes a north-easterly course along that coast to Rás-al-Hed, at a velocity of half to 1½ miles an hour.

To the south of Soḳóṭra, at a distance of about 150 miles, is a great whirl of current, caused possibly by the interposition of the island; or, it may be, that shoal water exists at that spot; it commences about the parallel of Rás Hafún, when the current strikes off to the eastward to the meridian 55°, then to the southward, to the parallel of 5°, whence it again curves up to the north-eastward, forming a complete whirl. At the northern limit the velocity is very great, being 4 to 5 miles an hour, while at it southern extreme it is only three-quarters to a mile an hour. A very heavy confused sea is created by this whirl. Care should be taken to avoid the strongest portion of the current in making the coast of Africa from the eastward, by keeping well to the southward.*

Little is known of the currents at this season close to the northward of Soḳóṭra, but there is said to exist a whirl similar to, but of less magnitude than, that south of the island. Horsburgh remarks that the currents on the north side run with the prevailing breezes to the north-eastward, but when the wind moderates, an almost equally strong current runs in the opposite direction. This most probably applies to within a few miles of the land.†

CURRENTS in NORTH-EAST MONSOON.—The current in the Arabian sea generally sets to the south-westward, its velocity depending on the force of the wind. When the wind is light there is little or no current.

The currents in the gulf of Aden are most irregular, depending entirely on the prevailing wind. Considerable time and attention have been paid to the subject by the several officers employed, from time to time, on the survey of the coasts, but to no purpose; all attempts to reduce them to principle, for the guidance of the navigator, have failed; the general conclusion arrived at is, that they are set in motion by the prevailing winds, increasing and decreasing in velocity in the same ratio as the force of the wind, and influenced in some degree by the moon's age and consequent change of the tides, which are very irregular. This latter remark only applies to the coast current.

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* Lieut. Taylor, I.N.

† For complete details of the currents in the Arabian sea and gulf of Aden, and East coast of Africa: *see* Gulf of Aden Pilot, and Admiralty wind and current charts.

On the Somáli, or African coast, within the gulf of Aden, the current in the N.E. monsoon is very uncertain; but it generally sets to the eastward, or totally opposite to that on the Arabian coast. It sometimes, however, sets to the westward without any apparent cause.

NOTE.—The description of the Sokótra islands and the African coast westward of Rás Asír will be found in the Gulf of Aden Pilot.

CHAPTER XI.

ISLANDS AND SHOALS IN THE MOZAMBIQUE CHANNEL.*

VARIATION in 1878 :—

Europa island	18° 40′ W.	Johanna, Comoro islands	11° 0′ W.
Juan de Nova island	14° 20′ W.	Glorioso islands	9° 30′ W.
Chesterfield island	13° 30′ W.	Cosmoledo islands	8° 50′ W.
St. Lazarus bank	12° 15′ W.		

EUROPA ISLAND is about 5 miles in length E.N.E. and W.S.W., about 3 miles wide, from 50 to 80 feet high, and visible from a vessel's deck 12 or 15 miles. Its north-east point is in lat. 22° 19′ 15″ S., long. 40° 27′ 30″ E. This island is uninhabited; it is sandy, with low hummocks in places, and for the most part covered with dwarf trees, bushes, and rushy grass; here and there are a few small casuarina trees, from which circumstance it is likely water might be obtained by digging. There is no safe anchorage; vessels may let go their anchor on the edge of the coral reef to leeward of the island, but without room to swing in case of a shift of wind. There are some large goats on the island and plenty of fine turtle.

The east side presents low perpendicular cliffs, and is apparently steep-to; no reef was seen nor anchorage found; at the north-east point, however, a reef extends off half a cable, and there are 12 to 18 fathoms water, a cable outside it†.

On the north side is a coral flat, which dries at low water springs, and extends from a quarter to half a mile from shore, except towards the north-west point, where the reef terminates; here there is a small extent of steep beach, with good landing in moderate weather. The coral flat is steep-to, with no bottom at 30 fathoms, within a cable; it shows well towards low water, but at other times must be approached with care. Inside the coral flat the shore forms a deep bight, with a large lagoon at the eastern part of the north side of the island; this lagoon extends nearly across to the south shore; it is not more than 4 or 5 feet deep at low water, but it is well stocked with fish.

The north-west point is sandy, with low bushes; it runs off shoal and rocky from one to 2 cables. A vessel might anchor a little to the southward of the north-west point in 7 to 11 fathoms, but very close to a depth of 2½ fathoms. The west side is rocky, but apparently steep, with a considerable surf on the beach; landing may be effected in places between the rocks.

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* *See* Admiralty chart :—Africa, (general) sheet V., cape Corrientes to Juba islands, including Madagascar, No. 597; scale, $d = 1\cdot3$ inch, and plan of Europa island on chart No. 851.

† R. Beecroft, Master, R.N., 1825.

The south side of the island is low, and a reef extends off about a mile on the south-west side, with no soundings close to it; some accounts say the reef extends farther, but this being usually the weather side of the island, and therefore unsafe to approach, we have no accurate information about it.

Current.—H.M.S. *Flying Fish*, in visiting this island in the middle of November, 1875, was drifted to the northward by the current; when near the island, its direction was to the north-west with a velocity of from 2 to 2½ miles an hour, causing strong tide rips, whirls, and in places almost a race. The wreck of an iron three-masted steam vessel, on the south-east shore, was almost high and dry.

BASSAS da INDIA,* sometimes named Europa rocks, was discovered by the ship *Europa* in 1774.

This reef was examined in 1878 by Commander Wharton, H.M. Surveying ship *Fawn*, whose observations place the east point of the reef, in lat. 21° 27′ 20″ S., long. 39° 45′ 38″ E., the British Consulate at Zanzibar being considered in long. 39° 11′ 11″ E.

Bassas da India is a circular reef about 9 miles in diameter, and encloses a shallow central lagoon; some small rocks above water are situated on the north and east sides; the west and south sides dry 4 feet at low water. The reef is steep-to. Soundings of 720 fathoms, sand, were obtained at one mile from the west side of the reef; 470 fathoms, sand, a mile from the north side, and 200 fathoms three-quarters of a mile from the south side.

Two large anchors were seen, one on the north-east side of the reef, and the second on the south-west side: near the south-west anchor there are also some ship's tanks. The sea breaks on the reef.

PILOT SHOAL was reported in 1850 by Captain White, of the American whaling barque *Pilot*, in lat. 21° 10′ S., long. 38° 57′ 30″ E. The vessel at 7.30 a.m. on January 5th passed over the end of a shoal with, it was assumed, not more than 3 fathoms on it, as the bottom was distinctly seen; at the same time several patches to windward were observed, which looked shoaler; the whole extent of the shoal was estimated to be 1½ to 2 miles. This shoal ground was said to lie N.W. by W. ¾ W. by *compass* distant 35 miles from Bassas da India, but this position does not agree with the lat. and long. given by Captain White; assuming that the lat. and distance from Bassas da India are correct, then the bearing is probably a *true* one.

In this locality, namely N.W. by W. ¾ W. (*true*) 35 miles from Bassas da India, an unsuccessful search, extending over a period of four days, was made by Commander Wharton in February 1878. The weather was favourable and the water clear, but no soundings could be obtained within distances of 5 to 15 miles on all sides of the reported position of the shoal, nor could any sign of shoal water be seen from the masthead. A depth of 1,620 fathoms, gray ooze, was obtained 3 miles to the south-east of the alleged portition of the shoal.

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* *See* Admiralty chart, Bassas da India and Europa island, No. 851; scale, *m* = ¼ inch.

JUAN de NOVA ISLAND,* the centre of which is in lat. 17° 3′ 30″ S., long. 42° 42′ 50″ E.,† is low, flat, and sandy, covered with shrubs and bushes; it cannot be seen more than 8 or 10 miles, and should be carefully avoided at night. This island, about 2½ miles long, appears to be the rendezvous of aquatic birds, for there are generally great numbers in its vicinity. A shoal extends 4½ miles off the east end, on which the sea breaks heavily. Breakers are also said to extend 1½ miles off the west end.

A bank, with from 8 to 12 fathoms water on it, extends 3 or 4 miles northward of Juan de Nova, and affords very good anchorage during the south-west monsoon under the lee of the eastern end, in 7 to 10 fathoms water, clean sandy bottom, at 1½ or 2 miles from shore. This bank shows well by the discoloration of the water; it terminates abruptly from 12 fathoms in most places, and its boundary is everywhere coral.‡ Juan de Nova bank is apparently quite distinct from the great Pracel bank, with a space of about 20 miles between them.

The following is from the Remark Book of H.M.S. *Flying Fish*, 25th November, 1874:—Approaching in a S.S.W. direction the island shows a long low front, dotted with trees, and at intervals white sand patches—which at a distance appear like stone houses—through the green shrubs and bushes. From the edge of the northern bank in 9½ fathoms, the bottom was plainly visible and continued tolerably level, the depth increasing to 13 fathoms, till within half a mile of the shore, when it shoaled gradually to 8, 5, and 3½ fathoms, but in these latter depths several large rocks were seen, but with sufficient water for boats.

The interior of the island is depressed and covered with brushwood; there are one or two large trees, and of the latter several of stunted growth line the edge of the cliffs, which rise about 30 feet above the sea. Landing in moderate weather is easy on the north shore, as the swell in the depth of 10 to 13 fathoms, gradually moderated as the island was approached. No water was found, and no living thing was seen on the island, only a few birds in its vicinity. The ship, whilst waiting for the boat, drifted on to the bank and anchored with the kedge, the depth of water under the bow being 23 fathoms, and under the stern 14 fathoms, with the east extreme of the island S. 35½° W. mag., and angle between extremes of the island 26°. Current about a mile easterly.§

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* *See* Admiralty chart:— Madagascar, West Coast, cape St. Andrew to cape St. Vincent, No. 759; scale, $m = 0 \cdot 9$ inch; and northern portion of Madagascar with the Comoro islands, No. 758.

† Owen. ‡ R. Beecroft, Master, R.N., 1825. § Nav. Lieut. R. W. Middleton, R.N.

CHESTERFIELD ISLAND, lying near the northern part of the great Pracel bank, its centre being in lat. 16° 17½′ S., long. 43° 55′ 30″ E., is about a mile in extent north and south, 15 or 20 feet above the sea, and visible about 10 miles from the deck of a large ship, but as the rise and fall of tide is about 15 feet, the time of tide must be considered. The north-west end of the island consists of a black mass of rock, with a reef extending about a mile from it. On the west side a reef extends off apparently 3½ or 4 miles, on which the sea breaks heavily, and is considered very dangerous to passing ships. The south end and east side appear clean and bold. The soundings on approaching the south part of this island are regular, shoaling from 13 fathoms, at 6 miles, to 10 fathoms, at about one mile off.*

Nav. Lieut. R. W. Middleton, of H.M.S. *Flying Fish*, February 1876, states :—Chesterfield island should be approached with the greatest caution: in a bright moonlight night it would not be visible from the extremity of the danger, which extends to the westward. The given position of the island is open to doubt, as from two or three observations by bearings and distance from cape St. Andrew it appears to be placed on the charts Nos. 758, 759, corrected to 1873, 3 or 4 miles too far westward. The island can always be distinguished in day by the black rock on it, which being isolated in the midst of the sand which forms the island, is conspicuous.

Chesterfield island may be avoided at night by keeping off the Pracel bank, as soundings of 15 to 20 fathoms extends several miles in all directions, and to the westward as much as 40 or 45 miles, according to the chart.

Grenouille, a small shoal with 2½ fathoms water on it, the existence of which is doubtful, is marked on the chart in lat. 15° 41½′ S., long. 44° 15½′ E., about N. by W. 33 miles from cape St. Andrew.

At about 6 miles in a N.E. by E. ½ E. direction from the above position, in lat. 15° 43′ ½ S., long. 44° 21′ 45″ E., the depth is 9½ fathoms, coral; where H.M. ship *Spartan* anchored in October, 1877. Numerous large rock fish were caught here. The flood runs to the southward, and ebb to the northward, nearly a mile an hour.

ST. LAZARUS BANK has hitherto been much misplaced on the charts owing to the erroneous positions of the few vessels which have struck soundings on it in passing. Some have doubted its existence altogether, in consequence of finding no bottom over almost the entire space assigned to it on the charts, but any doubt on this subject has been set at rest by the fact of both H.M. ships *Frolic* and *Cyclops* having anchored on the bank.

H.M.S. *Cyclops*, in 1861, when steering S. by W. ½ W., struck soundings in 17 fathoms, then 9 fathoms, and immediately anchored in

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* Captain D. Cowan, barque *Euphrates*, 1862.

10 fathoms, hard sand in lat. 12° 3′ 30″ S., long. 41° 22′ E. The water was very clear, and the bank appeared to extend far in all directions as seen from aloft. Thence the *Cyclops* weighed and proceeded S. by W. ½ W., with soundings as follow:—9, 8, 10, 13, 14, 25, when having run 6$\frac{2}{10}$ miles from her anchorage, no bottom was obtained at 100 fathoms.*

H.M.S. *Frolic*, in 1855, struck soundings in 9 fathoms, rounded to and anchored in lat. 12° 9′ 10″ S., long. 41° 23′ 40″ E. (0° 35′ east of St. George island, Mozambique). When at anchor the vessel swung to a 2-knot current setting to the south-west. To the north, north-east, and east of this anchorage at quarter of a mile distance the soundings were 10 fathoms. To the south, south-west, and west at one mile distance, the depth was 7 fathoms, and a little farther to the southward several casts of 6 and two of 5½ fathoms were obtained. From this, proceeding on a S.W. course the soundings deepened regularly to 20 fathoms, and shortly afterwards no bottom at 100 when 3 or 4 miles from her anchorage.†

The barque *Empress*, in 1859, struck soundings in 7 fathoms, coral, in lat. 12° 5′ S., long. 41° 32′ E.; the bottom was plainly visible in white and dark patches, with an appearance from aloft of shoal water all round. Proceeding a (true) South course, the following soundings were obtained:—7, 7, 15, 15, 16, 15, 17, 35, white and red coral and shells, this last sounding being in lat. 12° 15′ S., long. 41° 35′ E.; at 2 miles farther south no bottom was obtained at 100 fathoms.‡

H.M.S. *Penguin*, in 1851, in lat. 12° 16′ 30″ S., long. 41° 29′ E. (by star and noon observations), struck soundings in 17½ fathoms, coarse sand and broken coral, from whence she proceeded S.S.E. 6 or 7 miles, with from 17 to 19 fathoms, then no bottom at 100 fathoms.§

Two vessels are said to have grounded on this shoal; the ship *Reliance* in 1833, in reported latitude and longitude 12° 33′ S. and 41° 17′ E.‖; and the slave barque *Charles et George*, in 1857, in latitude and longitude (said to be) 12° 10′ S., 41° 47′ E.; the latter vessel laid out an anchor in 17 feet water to heave off.¶ From these vessels' reports there can be no doubt that the Lazarus bank is dangerous in one or more places, but the assigned positions of grounding do not agree with the other more careful reports: it is most probable that the dangerous spot lies close to where Captain Nolloth obtained 5½ fathoms, namely, in about lat. 12° 10′ S., long. 41° 20′ E.

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* Captain W. J. S. Pullen, R.N., 1861.

† Commander M. S. Nolloth, 1855.

‡ Mr. G. Highley, barque *Empress*, 1859.

§ *See* Admiralty chart:—Comoro islands with the adjacent coasts of Africa and Madagascar, No. 2,762; scale, $m \doteq 0{\cdot}06$ inch.

‖ Captain Cockle, ship *Reliance*, 1833.

¶ Annales Hydrographiques, 1858.

The conclusion from the above reports of the Lazarus bank is that it lies between latitudes 12° 2′ S. and 12° 20′ S., and longitudes 41° 21′ E. and 41° 40′ E., with general depths of 7 to 20 fathoms, and with one dangerous place of 2½ or 3 fathoms, probably in about lat. 12° 10′ S., long. 41° 23′ E.: in bad weather the sea on the shoal spot must break. There can be little doubt but that the lead will give sufficient warning of an approach to the dangerous part, and that with a proper look out no risk will be run in passing this bank by day; but at night large vessels will do well to avoid the above supposed limits, and should they strike soundings it will be advisable to round to and anchor without delay until daylight.

The hitherto supposed position of the Lazarus bank, viz., between latitudes 11° 48′ and 12° 15′ S., and longitudes 41° 40′ and 42° 22′ E., has been crossed and recrossed by H.M. ships *Lyra*, *Wasp*, and *Gorgon*, sounding frequently with no bottom at 40 and 50 fathoms. H.M.S. *Gorgon* in particular, in 1862, ran from lat. 11° 54′ S., long. 41° 42′ E. to lat. 12° 16′ S., long. 42° 7′ E., trying for soundings without obtaining any at 60 or 80 fathoms.

VAILHEU SHOAL is in lat. about 11° 49′ S., long. about 43° 3′ 46″ E., with the (*visible*) extremes of Comoro N. 31° E. and S. 76° E.; a town on the mountain side N. 64° E., and Mantzeza hill (sometimes called Round hill, or the ploughed mountain) East, distant about 10 miles.* This shoal runs N.W. and S.E. with from 4 to 6 fathoms water on it, probably less in places. Of its extent accounts vary in stating it to be from 2 to 12 miles long. Captain Polkinghorne, who passed over it in H.M.S. *Sparrowhawk* in 1826, says the western extreme bore N.W. by W. or W.N.W. from the south-west end of Comoro. The *Sparrowhawk* appears to have been steering S.E., and obtained from 6 to 4½ fathoms: the water was of a light green colour, and showed at 4 or 5 miles distance from the foreyard.

Of the existence of this shoal there can be no doubt, for besides having been seen from H.M.S. *Brilliant*, and passed over by the *Sparrowhawk*, it was also reported by H.M.S. *Nerbudda*, from which vessel heavy breakers were observed in about the above-assigned position, but night coming on with a heavy sea, they had no opportunity of further examination. Mr. Sunley, H.M. consul for the Comoro islands, also states that he passed over the shoal.

Vailheu shoal is no doubt dangerous in places for large ships; Horsburgh mentions a case of one being nearly lost here when returning from Bombay to England, and also quotes a Portuguese account, according to which there is 4 fathoms water at *half tide*, on the north-western part;

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* W. J. Olive, Master, R.N., 1847.

there are, however, no authenticated reports giving a less depth than 4 fathoms, and Comoro native accounts describe it as not dangerous for vessels of ordinary size.

Large ships passing through this part of the Mozambique channel at night should, when near the parallel of the south end of Comoro, keep to the westward of the meridian of 43 degrees, in order to avoid the vicinity of this shoal.

CURRENT.—H.M.S. *Cossack*, during her passage from Zanzibar to Johanna in December 1869, experienced the full force of the westerly current which flows past Comoro island. The day before making that island a course was shaped to pass 30 miles to windward of it; the *Cossack* experienced 40 miles current then, and 70 miles on the following day, setting in a direction nearly west, and forcing the ship to leeward of the islands.

The COMORO ISLANDS, four in number, lie nearly midway between the north extreme of Madagascar and the African coast; Comoro, the largest and highest of the four, giving its name to the group: the others are Johanna, Mohilla, and Mayotta, all of which are high and of volcanic origin. These islands, except Mayotta, are generally safe to approach, with clear passages between them.

In the parallel of the Comoro islands there are several dangers; St. Lazarus bank, Geyser reef, etc., a description of which will be found under their own heads: these dangers, although requiring much caution when in their vicinity, are sufficiently apart from one another to render the navigation of this part of the Mozambique channel perfectly safe if proper precautions are observed.

COMORO, also called Angazija, the northernmost as well as the largest and highest island of the group, is about 35 miles north and south and about 12 miles east and west. This island is the least known of the group, and even its form is very inaccurately defined: the little information known of Comoro is probably owing to the fact of its not possessing any harbour, nor, as far as is known, a single good anchorage.

Comoro, unlike Johanna and Mohilla, is not under the dominion of a single sovereign, but is divided into several districts, which each acknowledge an independent chief or Sultan: these petty sovereignties are frequently engaged in war with each other. The natives are a fine race and of remarkable stature; they appear to be of Arab descent with an intermixture of Madagascar blood.

The North Point of Comoro island is in the middle of the north side, rounded, and in lat. 11° 21′ 23″ S., long. 43° 19′E. All the north shore is low, but rises suddenly towards the mountains, within which are topped by numerous peaks and craters, with many of the latter around their sides. The greatest elevation at this end of the island is 4,500 feet high. A reef extends off the north-west point, but not beyond three-quarters of a mile.*

On the north-east side is a rocky promontory, 250 feet high, joined to the shore by low ground, and appears like an island. The town of Bwanku is about 2 miles to the southward of it.

The Eastern Coast is straight, and the water apparently everywhere deep. The mountain slopes to the water's edge with but little level land, and there are several recent lava streams. Mbagini is a walled town about 2 miles north of the south-east point, and is said to be one of the largest in the island.

The South-east Point, in lat. 11° 52′ S., long. 43° 29′ 20″ E., is low, with a cone-shaped crater near its extremity. The shore is here bordered by a narrow reef, and there are 30 fathoms water, at 1½ miles from the beach. Inland are sharp cone-shaped peaks rising from the southern spur of Comoro mountain.

The south point is 5 miles S.W. by W. from the south-east point, and is also low, with flat land within, the hills beginning to rise 1½ miles from the coast.

The South-west Point is about 13½ miles N.W. by W. from the south point. The land rises rapidly from the water's edge, apparently smooth and without a break to the summit of Comoro mountain, 8,700 feet above the sea.

The south coast is rocky and steep; the country vessels frequently sail along within speaking distance of the shore. There is a village close to the sea a little to the eastward of the south-west point.

The vicinity of every town and village is cultivated with cocoa-nut trees, and the valleys are evidently very fertile, being richly covered with trees and vegetation. Comoro peak has trees in places to its summit, and it is remarkable that the mountainous land at the south end of the island have but few craters.

The town of Mouchamouli is close to the north-west point, and is next in size to Maroni and Itzanda.† There is an anchorage opposite a small sandy beach about 1½ miles westward of Mouchamouli in 30 or 35 fathoms water at 2 cables from the breakers. This anchorage was visited by the French man-of-war *Prudente* in 1843; the description given by the officer commanding that vessel is not such as to recommend it to others.†

The West Coast is said to be bold of approach, and to have no anchorages, except Maroni and Itzanda; there are several villages along this shore. When approaching Maroni from the south-eastward a remarkable hill, called Mantzeza, but better known as Round hill, will be seen over the low extreme of the south-west point. This hill, which is about 3 miles N.N.W. of that point, is about 700 feet high; it juts out into the sea and presents a bluff face to seaward, but a reef extends about a mile from it. The town of Mantzeza is on the south-east side of the hill. When seen from the westward this hill alters its aspect; it then appears to be an oblong hill with small ravines from top to base, as if it had been ploughed.*

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* The information relative to Comoro island, from the north-west point round by north and east to the south-west point, is by Com. Wharton, H.M. Ship *Fawn*, 1878.

† Vicomte de Langle, 1861.

Iconi hill, also jutting out into the sea, is next to the northward of Mantzeza, distant about 3 or 4 miles; when seen from the southward it appears like a saddle, and presents a steep face to seaward, but on nearing it a low point of small extent will be observed running out from its base, and just to the southward of and under the hill will be seen the town of Iconi, which is of considerable magnitude. This hill, when seen from the westward, presents two peaks with a deep hollow between them; there are the ruins of a white stone building on the apex of the northern peak.*

About a mile to the northward of Iconi hill a low point projects; above this point, some way up the side of the mountain, there is a large walled town. About 2 miles to the northward of Iconi hill, another low point will be observed with two or three large trees on it; round this point is the bay of Maroni. Between Maroni and Itzanda, a distance of about 3 miles, the coast is rocky and steep-to: about a mile to the northward of Maroni a low black point projects, now forming the northern extreme of Maroni bay; this point was produced by an eruption of lava in 1858. A mile or so to the northward of Itzanda a walled town will be seen some way up the side of the mountain. From Itzanda northward the coast appears to trend about N. by E., but we have no description of this part.

MARONI BAY, on the west coast of Comoro, is a slight indentation of the shore with a small cove and a rocky islet in it in lat. 11° 40′ 44″ S.† This cove is all shoal, but it affords good landing at its head: dhows enter the cove at high water and lie on shore at low water.

The town of Maroni stands at the head of the cove: it is large, and surrounded by a wall; the huts are generally detached and the streets are narrow and dirty; besides the huts there are several substantial stone buildings. The Sultan of Maroni is the chief of most influence in Comoro, although we believe the district subject to his authority is not large.

Anchorage.—Outside the cove there is anchorage for dhows close to the rocks in about 5 fathoms water, and for ships in 25 fathoms, at about 1½ cables from the rocks. H.M.S. *Brisk* anchored in 25 fathoms, with the low rocky islet in the north part of the cove on with a notch in the high land with a tree in it bearing S.E. by E. ½ E., and the extreme point to the southward S.W. ½ S. In this position with 60 fathoms of cable the vessel had only good room to swing clear of the rocks.

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* W. J. Olive, Master, R.N., 1847.

† Vicomte de Langle, 1861.

As the bank of soundings is so limited in Maroni bay, it is necessary to anchor with precision in the right depth, for which purpose strangers will do well to send a boat in previously to find a berth, and anchor as a guide.

This anchorage is protected from the violence of the southerly wind and swell by Iconi hill, which projects into the sea, but it is too close to the rocks for a vessel to get out, if the wind comes in from the westward: and in the northerly monsoon worse.

Supplies are cheap and plentiful, particularly cattle, which are exported to the other Comoro islands. Water, however, is very scarce, and said to be so all over Comoro.

Tides.—It is high water at Maroni, full and change, at 4h. 53m.; springs rise 10 feet; equinoxial springs 13 feet.*

ITZANDA BAY and town are about 3 miles northward of Maroni, the two bays being somewhat similar. The anchorage, like that of Maroni, is very indifferent, being deep and close to shoal water, although the soundings at Itzanda may extend a little farther: ships should not anchor in less than 20 or 25 fathoms, which depth will be found about midway between the extreme points of the bay. There is a good landing at the head of Itzanda cove near a tree of large girth.

Itzanda is governed by an independent chief, who does not, however, possess any importance. The town is walled in like Maroni, and is about the same size. Besides the town there is a village in the north part of Itzanda bay, and between them a pillar will be observed. At the north extreme of the bay there is another pillar, close to the southward of which, at the head of a small inlet, there is a well.†

COMORO MOUNTAIN rises at the south part of the island, its highest part being about 8 miles from the southern extreme; several observations give its elevation 8,700 feet. The summit of this mountain is smooth and dome-shaped, rising so evenly from the sea on its south side as to give a deceptive idea of its height when close to: its great elevation will show better at the distance of 25 or 50 miles, and in clear weather it may be seen at over 100 miles distance. This mountain is the more remarkable from the absence of any land of equal height on the eastern coast of Africa, and also on account of its being the highest mountain in the world *as compared with the size of the island,* although we believe to this day unnoticed by geographers in their comparative tables of mountains. The peak is in lat. 11° 46′ 35″ S., long. 43° 21′ 40″ E.

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* Vicomte de Langle, 1861.

† W. B. Edwards, Master R.N., 1853.

Comoro mountain, and indeed the whole island, is volcanic: an eruption is said to have occurred about the year 1830, and again in 1855; in this latter eruption the lava issued from several old places, and also on the more eastern part of the island; it then had the effect of driving several dhows on shore and of casting a great quantity of fish upon the coasts. Another eruption took place in 1858, on which occasion the lava flowed out of the side of the mountain into the sea on the west coast, between the towns of Maroni and Itzander, which, being only 3 miles apart, thus narrowly escaped destruction. We saw in 1861 the lasting effects of this eruption; all trace of vegetation was destroyed where the stream of lava had passed, and a projecting black point of scorious lava which previously had no existence, had been formed about a mile to the northward of Maroni.

At the south-west point of Comoro ignited sulphurous vapours are said frequently to issue from the crevices in the ground, showing lights at night to vessels when passing close. The popular belief among the natives is that this part of the island is inhabited by devils, and they will on no account venture in the vicinity at night.

MOHILLA is the smallest and least elevated of the Comoro islands, being about 15 miles north-west and south-east, and 7 or 8 miles wide at its broadest part, not including some small islands at the south-west end which extend rather more than 3 miles from shore. Mohilla is about 1,900 feet high: on the east side the land is low near the sea, rising gently to the mountainous ridge running along the middle of the island, which has no peaks and appears capable of cultivation to its summit. The island is well wooded, the hills being covered with trees to the very top.*

Mohilla in 1865 was governed by an independent Queen, a niece of Radama I. of Madagascar, and was educated by the French.

WHITE ROCK is a remarkable islet off the south-east end of Mohilla, from which it bears N. 76° E., nearly 4 miles: it is about 100 feet high, flat topped with steep sides, but has a low flat projection on its west side. From a distance it has the appearance of being bold-to, and there is a good channel inside it. There are several other islets off the south-east end of Mohilla, the outermost of which is about 1¾ miles from shore, but these are not so high or remarkable as White rock, which is conspicuous even at night.

The North-east Coast extends about N.W. and S.E., nearly in a straight line: it has soundings all along of 8 to 14 fathoms, at one to 1½ miles off shore, and 14 to 17 fathoms at 1½ to 2 miles, and appears to have anchorage everywhere: it should not, however, be approached within a mile.

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* *See* Admiralty chart:—Madagascar, cape St. Andrew to Antongil bay, with the Comoro islands, No. 758, scale, m = 0·85 inches; and plan of Fumboni bay and road on chart of Comoro islands, No. 2,762.

DOĀNY is a brown, dull-looking, walled town close to the beach, in Fumboni bay, a little to the southward of the north-east extreme of Mohilla; it has a solid rampart or platform for a battery of guns along its sea face. Near the north-west corner of the town, facing the beach, is a building having the appearance of a casemated barrack; it is in lat. 12° 20′ 30″ S., long. 43° 35′ 30″ E. The Queen's palace is about half a mile to the northward of the town, on the slope of the hill. The natives are a peacefully disposed people, very similar to those of Johanna; the population is not large. The island is very fertile; coffee and spice trees grow luxuriantly in a plantation belonging to the Queen, and cocoa-nuts abound. Cattle are good and cheap.

The Anchorage off Doāny is good during the southerly monsoon, although at times there is more swell than would be expected under the lee of the island: during the north-east monsoon it is not safe. H.M.S. *Brisk* anchored in 10 fathoms, sand and shells, at about a mile from the landing place, with the centre of the town S.W. ⅞ S., and the extreme of Mohilla S.E.: inside this berth the soundings shoal quickly to 7 and 6 fathoms; the anchorage is considered good in those depths, but large ships are recommended not to go within the depth of 9 fathoms.

From the anchorage off Doāny, the following bearings were taken:—White rock, S. 47° E.; Bluff head at south-east point, S. 42° E.; extremes (visible) of Comoro, N. 4° W. to N. 21° W.; north extreme (visible) of Johanna, N. 82° E.*

Doāny Cove is a small dhow harbour formed by the coral reefs. The entrance between the reefs is narrow and obstructed by a central coral shoal, but there is 5 or 6 fathoms water, on each side of the shoal. Inside the harbour there is not room for anything larger than dhows to swing.

The landing place is in this cove: it is inconvenient at low water, owing to the sandy beach running out very flat, when boats cannot approach within 250 yards of the dry beach. When there is much surf on the reef the entrance to the cove shows plainly, but if only breaking occasionally some care is necessary not to miss the entrance. A drop in the high land forms a good leading mark, but it cannot well be described.

The watering place is about a mile to the south-eastward of the anchorage, and is not convenient; the island, however, is generally well supplied with water.

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* W. J. Olive, Master, R.N., 1847.

Tides.—It is high water at Doāny, full and change, at about 4h.: springs rise 11 or 12 feet.

North Coast.—Between Doāny and the north point of Mohilla the coast is said to be skirted by a reef, about half a mile from shore, with a boat passage inside it. There is a black rock always above water about 2 miles off the north-west point; in passing this rock at 2 miles distance there is no bottom at 40 fathoms. A reef of dry rocks projects a quarter of a mile from the north-west point; at 1½ miles from this reef there is no bottom with 30 fathoms.

Anchorage.—The ship *Suffolk* anchored in 1756 off the north end of Mohilla in 24 fathoms, small stones, shells, and coral, at three quarters of a mile from shore, with the north-west point W.S.W., eastern extreme of land E. by S. ½ S., and a town S.S.W.: at this town there is a good watering place 200 yards from the beach in a ravine about 12 feet deep, where the casks may be filled with the engine and then rolled with ease over a soft sandy beach to the sea. Watering boats cannot work between last quarter ebb and first quarter flood on account of a reef which projects from the point on which the town is built across the little bay where the watering place is to two rocks to the eastward, which are always above water.

Tides.—On the north shore of Mohilla the flood sets to the westward, but changes before the water has done rising, as does the stream to the eastward before low water.

The South Coast of Mohilla has a chain of volcanic looking islands towards its western part, which extend upwards of 3 miles from shore, and have anchorages inside them, in from 26 to 35 fathoms, sand and shells; these islands are for the most part surrounded with reefs, but may be approached on their northern sides within one or 2 cables.*

Approaching from the westward the fourth or fifth island, called Choa-Sanzi, has an islet at its southern extreme perforated with round holes, which at a distance appears like the Needles rock, and may be closely rounded. A small but rather high island (Choam-bouhou) will then be perceived; a rock which covers at high water lies at its south point, to which give a berth of 2 cables. With the pass between Choa Djoumadini and Choa Sanzi open N. by E. distant about 1¼ miles from the latter islet, is a bank of large stones and shingle with 6½ fathoms on it, and which is visible in calm weather. Extensive shoals of the same character lie eastward of Choa Sanzi with 6 fathoms water.

NUMA-CHOA HARBOUR is to the N. by W. of Choa-Moa island, and about a mile S.E. by E. of the town: it is formed by sand and coral reefs on each side, which for the most part dry at low water. The anchorage is in from 8 to 10 fathoms, sand and mud, with Numa-Choa point N.W. by W. ½ W., and the extremes of Choa-Moa S. ¼ E. and S.S.E. ½ E.* This port appears to be a good place of shelter during the bad weather season.†

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* *See* plan:—Anchorage on the south side of Mohilla island, on chart No. 2,762.

Approaching from the eastward, if bound to Numa-Choa, pass the south-east end of Mohilla at 2 or 3 miles, and follow the south coast until the Sail rocks (off the south-west extreme of Mohilla) are open to the southward of Choa-Moa island N.W. by W. ½ W. Choa-Moa is a small but high conical island with a flat top, and is the easternmost of the group, except a small islet near the shore. This mark clears the reefs which extend from the south-east end of Mohilla westward to a point which is about 2 miles eastward of Choa-Moa: when this point bears N. by E. a vessel may haul in to pass to the northward of Choa-Moa, and if bound into Numa-Choa harbour the point of that name on which the town stands N.W. by W. will lead in.

Approaching from the westward, the south extreme of the islet which is east of Choa-Moa island in line with the north extreme of Choa-Moa, bearing S. 80° E., leads between Mohilla and its out-lying islands. The islet east of Choa-Moa may be known by having a peculiar rent near the south end, whilst the north point forms a pillar. After passing Choa-Moa the high red cliff at the head of Numa-Choa harbour will come in sight; bring the west end of the cliff, which is a bluff with some large mango trees on a sandy beach below it, to bear N.W. by W. ¼ W.; this will lead into the harbour.‡

When the bluff is on the bearing N.W. by W. ¼ W., a peaked hill about a mile east of Miremani harbour will be seen over the mango trees and centre of sand spit, and just open of the bluff; take care not to shut the hill in to the eastward of the bluff until Choam-bouhou island is well open of Choa Sanzi island, when the course can be altered to the northward, and the vessel may anchor in 8 to 10 fathoms.

The reef around the harbour is steep-to, and can generally be seen from aloft.

The *Vulture* obtained no soundings with 20 fathoms of line, on the above mentioned leading mark, until Mbouhou opened north of Choa-Moa island, when one cast of 10 fathoms and one of 13 fathoms inside the harbour were obtained.

The inshore anchorage is generally filled with dhows, Numa-Choa being a port of call for all dhows bound from Zanzibar and the adjacent coast of

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* French Survey, 1845. † Vicomte de Langle, 1861.

‡ Information on the Comoro islands, by Nav. Sub-Lieut. T. C. Pascoe, H.M.S. *Vulture*, 1874.

Africa, to the north-west coast of Madagascar during the north-east monsoon. Here they obtain wood, water, and effect repairs.

The Town of Numa-Choa, to the westward of the harbour cliffs, is a walled town of considerable size, and fronted by a sandy beach. The houses are mostly composed of matting. The principal trade is in cocoa-nuts, which are sent to Madagascar. The natives appear to be good artificers, the Comoro and Johanna dhows being sent here for repairs. Dhows do not frequent this harbour during the S.W. monsoon; in that season they call at Fumboni bay, Doāny, which is the principal town in Mohilla.*

Water.—There are several convenient watering places on the south side of Mohilla; one of them is at the head of Numa-Choa harbour.

Winds.—The south-west monsoon sets in at Numa-Choa in the middle of March, when heavy squalls from the westward and much rain may be expected.

Tides.—It is high water at Numa-Choa, full and change, at about 3h.; springs rise about 14 feet.†

The South-west Point of Mohilla is surrounded by acoral reef extending nearly three-quarters of a mile from shore. On this reef, at rather less than a quarter of a mile from shore, there are two rocks with perpendicular sides, called from their appearance the Sail rocks; they are visible at 9 or 10 miles distance.†

MIREMANI BAY lies half a mile to the eastward of the Sail rocks. It is a well-sheltered anchorage in 10 to 20 fathoms, sand and mud, being protected on each side by coral reefs. About three-quarters of a mile to the south-east of the entrance to this bay there is a patch of flat rocks above water.†

JOHANNA is next to Comoro in size and in height, but far surpasses it in beauty and fertility: in form it is triangular, the east side running about north and south, and the north-west side forming a deep bay where the town stands. This island as seen from the westward has been aptly compared by Captain Nolloth to a schoolboy's "comparative view of the mountains of the world," being a succession of peaks one rising behind the other, and all, including Johanna peak, being wooded to the top.‡

When seen from the eastward at 50 miles distance, the island makes, with two peaks, the highest to the northward, with the land gradually sloping thence to the southward.*

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* Information on the Comoro islands, by Nav. Sub-Lieut. T. C. Pascoe, H.M.S. *Vulture*, 1874.

† French Survey, 1845.

‡ *See* plan :—Johanna road, on chart No. 2762.

Johanna is governed by an independent Sultan who resides at the town on the north-west side. The natives are hospitable and well disposed to Englishmen, whom they have long been accustomed to look up to as their protectors and advisers when in difficulty. They are of Arab origin, but the lower orders are much intermixed with the African race. The slavery in this island is of a very mild and domestic form, the authority of masters over their slaves being in many cases almost nominal. The population of the island may be about 12,000 souls.

The climate of Johanna is on the whole healthy, the shores being nearly everywhere free from mangrove swamps. The cruisers on this station generally consider this island a sanitarium as compared with the other parts of East Africa.

JOHANNA PEAK is 5,177 feet above the sea, near the centre of the island, being about 5 horizontal miles from Pomony and 3 from Johanna town. This peak is of conical form, and probably a thousand feet higher than any of the others; except in the early morning it is rarely to be seen, being obscured by clouds. From the peak a spur of mountainous land projects towards each of the three ends of the island. Johanna is, like the other Comoros, volcanic, but not actively so now; the traces of former eruptions are very distinct close outside the town of Johanna, where vast accumulations of cinder may be observed cropping out on the roadside.

There is a lake, probably the crater of an extinct volcano, at a considerable elevation in the mountains at the back of Pomony. Four of the *Brisk's* officers ascended with some difficulty to this lake, but had not the means of corroborating the native report of its being fathomless. The Johannamen hold this lake in superstitious dread, and affirm that there are porcupines, alligators, and extraordinary birds in its vicinity.

North Coast.—According to Captain le Vicomte de Langle a reef extends 2 or 3 cables to the W.N.W. of the north-east point of Johanna, outside which the soundings are regular; but Mr. Olive, master of H.M.S. *Brilliant*, reports it to be shoal for 1½ miles from the point; as this is generally the weather side of the island, it is desirable to give the north-east point a good berth, though it is considered that danger does not extend far from it, and that the appearance of the reef, which by some authorities has been described as even 3 miles from shore, is caused by tide rips.

The north-east point when on with Saddle island at the west extreme bears S. 82° W., the two being about 15 miles apart, and the coast between forming a deep bay, in which is the town of Johanna. The north-west shore is bounded in most places by a reef extending from one to 2½ cables.* For 4 miles eastward of Saddle island the reef may extend nearly half a mile, but it then becomes bolder, and the whole way along this shore at half a mile distance there are no soundings with the hand lead.† The green line of reef shows at high water, and at about half tide the reef breaks everywhere, except with very smooth water.*

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* J. A. R. Petch, Master, R.N., 1860.

The old town of Whāni is about 3½ miles to the north-eastward of Johanna town. About 6 miles westward of Johanna town there is a small deep bay to the westward of a bold bluff called Assombe; this bight is open to the eastward, and has at its mouth a remarkable group of black rocks, with anchorage for small craft inside them.‡

About three-quarters of a mile to the westward of Johanna town the soundings deepen regularly from the shore to 20 fathoms, increasing afterwards to 42 fathoms at half a mile; beyond this the depth increases to 350 fathoms, soft black mud, at one mile from the beacon.

JOHANNA TOWN, also called Moussamoudou, on the north-west side of the island is about 10 miles from Saddle island, and about 6½ from the north-east point. The town, which is on low ground close to the sea, is substantially built of stone, with very narrow winding streets, and is surrounded by a wall; it is overlooked by a dilapidated fort or citadel, on a height immediately at the back. The English consulate is a detached building close to the beach about 300 yards to the westward of the town.

Directions.—During the southerly monsoon it is best for sailing ships to approach Johanna town from the westward, where a fresh breeze will often be found, whilst it is calm to the eastward: approaching this way give Saddle island a berth of at least 1½ miles, as at times there is a considerable swell and no wind under its lee: thence a vessel will often fetch the anchorage without a tack. Be prepared for squalls; they occasionally come off the land in furious gusts.§ During the north-east monsoon on the contrary, it is best to approach from the eastward, on account of light winds and westerly currents, which sometimes sweep a vessel towards Mohilla. During H.M.S. *Frolic's* stay at Johanna a French vessel of war arrived which had been close to Saddle island six days previously, but had been swept away in light winds and carried completely round Mohilla.‖

The Anchorage off Johanna town and also off the watering place is very limited in extent, and close to the shore; vessels should therefore be prepared to anchor immediately on obtaining soundings with the hand lead. The best anchorage is abreast of a cocoa-nut plantation, about three-quarters of a mile westward of the town, with a small white stone beacon bearing S.E. The beacon is in lat. 12° 10′ 25″ S., long. 44° 22′ E., 14 feet high, and was erected in 1854 by the Sultan at the request of Com. Nolloth of the *Frolic.** It is about 200 yards westward of a round grassy hill, and off it the soundings deepen regularly from the shore to 20 fathoms at a quarter of a mile distance, the bottom being dark sand with small pieces of coral and shell near the shore.

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* Captain W. L. Castle, R.N. 1837.

† W. J. Olive, Master, R.N., 1847.

‡ J. C. Barlow, Master, R.N., 1837.

§ T. J. Whillier, Master, R.N., 1847.

‖ Commander M. S. Nolloth, R.N., 1855.

A berth will be found in 15 fathoms, with the white beacon near the watering place S.S.E. ½ E., and Black rock E. ¾ N., about 1½ cables from the 5-fathom line off the coral flat. From this anchorage Saddle island bears N. 76° W., the north-east extreme N. 38° E., Johanna peak S. 32° E., and the citadel N. 75° E. This is a very good and convenient berth during fine weather. There is anchorage abreast or immediately to the westward of the town, but it is not recommended, the bank here being steep: during the southerly monsoon it is an unsafe position, the coral flat being too near.

Between the two mentioned anchoring grounds the coral flat, which dries at low water springs, extends about 1½ cables from shore. This flat fronts the round grassy hill before mentioned: it commences at the beach a little to the eastward of the watering place and terminates near Black rock, just to the westward of the English consulate. Off the edge of this flat the bottom is rocky and uneven.

The Watering Place is abreast of the south-western anchorage as above described, and is a small stream about 100 yards westward of the beacon; it flows through the cocoa-nut plantation, and generally discharges itself into the sea in two branches. This water is easily obtained and is excellent, except during the rainy season, when the quantity of vegetable matter brought down from the hills renders it bad after being kept a short time on board. In watering here a considerable length of hose is required to enable the boat to lie afloat; the beach, being composed of large round stones, is not suited for rolling casks. About 100 tons may be obtained in 8 hours.

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* The original beacon erected to mark the anchorage ground in Johanna road from various causes being difficult to see until quite close in, a second beacon has been erected about 30 yards from the former towards the town, and is easily distinguished. There is also a bluff point of rock, lying about 400 yards westward of the beacons, which has a large whitewashed target on its face used by vessels of war, but which is indistinct; but by far the best mark is the unmistakable round grassy hill above referred to.—James R. Quinn, Nav. Lieut. H.M.S. *Columbine,* 1872.

Nav. Lieut. E. Nankivell, 1874, writes:—The anchorage beacon has been cleaned and whitewashed, and though small, is easily seen 4 or 5 miles off.

There is a good stream of water close to the westward of the town, but it is not commonly used for shipping, as the natives are constantly bathing and washing in it. Another stream of water, off which there is anchorage, runs into the sea 1½ or 1¾ miles westward of the town.*

Winds.—The north-east monsoon reaches Johanna about 14 days later than Zanzibar. Its first decided *blow* occurred three consecutive years on December 25th at Johanna.† January is generally considered the worst month in the year for anchoring on this side of Johanna, as strong northerly winds sometimes occur, but heavy winds seldom blow home to the island; frequently the only indication of a very strong breeze outside is a surf on the beach, which prevents landing. A European resident states that in 7 years, during which the bay had been visited at all seasons, the only accidents which had happened were two vessels being blown to sea by the wind off the land. Nevertheless this is not a desirable anchorage during the north-east monsoon.

During the south-west monsoon this anchorage is quite smooth and safe. Vessels should lie with a good scope of cable, as violent gusts blow off the land. In 1861 H.M.S. *Wasp* dragged off the bank and was blown out to sea whilst most of her ship's company were on shore at exercise with small arms and field pieces.

Tides.—It is high water at Johanna town, full and change, at about 3h. 40m.; springs rise 11 feet.‡

Supplies are plentiful at Johanna: the cattle are small, but of excellent quality, at a cost of from 10 to 15 dollars a head. Fowls are small also, and cost 1½ dollars a dozen. Sweet potatoes, yams, cocoa-nuts, fruits and other refreshments, are abundant.

Trade.—The exports and imports of Johanna may be about 10,000*l.* a year, of which full half is accounted for by the produce of sugar. There is not much land suited for the growth of sugar, but what has been produced is of excellent quality. Coffee is cultivated, the climate and soil being well adapted for it.

The arrivals amount to 50 or 60 vessels a year, principally whalers touching for refreshments.† These vessels are charged 15 dollars a year for recruiting and watering as often as they please; other merchant vessels touching here pay 10 dollars port dues.§

SADDLE ISLAND, which forms the north-west point of Johanna, is small, bluff, and saddle-shaped, as its name implies, and is about 400 feet high. There are two or more islets inside and to the southward of Saddle island, connected by reefs, with boat channels between them. Saddle island is apparently bold on its north-east, north, and north-west sides, but from the north-west point a reef extends about S.W., which, increasing its distance from the shore to full one mile, then trends to the south-east and forms the reef which skirts the south-west shore of Johanna. There is said to be a good anchoring ground in about 12 fathoms, on the north side of Saddle island, but in passing no appearance of soundings could be seen.

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* The Johanna men are reputed to be great thieves. In watering, washing clothes or bedding on shore, leave nothing without a guard.

† Commander M. S. Nolloth, R.N., 1855. ‡ W. J. Olive, Master, R.N., 1847.

§ J. Richards, Master, R.N., 1848.

Off Saddle island, as well as off the other extremities of Johanna, tide rips give an appearance of shoal water beyond the reef to an extent of a mile or two. The bottom is probably rocky and uneven, but on two occasions in passing over these appearances of broken water no soundings were obtained, and it is considered that no dangers exist beyond the reef, which is plainly visible except at high water.

The South-west Coast is about 20 miles in extent: from about 3 miles southward of Saddle island to the south point the coast is slightly concave; the extremes of land are in one S. 41° E., and although several spurs of high land approach the sea, giving the appearance of a point at a distance, no point projects beyond the line joining the extremes of the island.

The south-west coast is in most parts skirted with a reef, which extends off farthest to the southward of Saddle island as before described; except there, it does not appear to be anywhere more than a mile from the shore, and in most places not more than 3 or 4 cables. The coast appears to be boldest to the southward of Pomony, where in places the reef terminates. About a mile to the south-eastward of the factory there is a bay apparently free from reefs, which may have anchorage, but it has not been examined: at the northern extreme of this bay a stream of good water runs into the sea.

There is another bay about a mile to the north-westward of Pomony harbour, and here again there is a stream of good water. About 5 or 6 miles to the north-westward of Pomony there is another harbour formed by the reefs, somewhat similar to Pomony, but it is said to be obstructed inside by coral shoals, and only fit for dhows.

POMONY HARBOUR is formed by coral reefs on the south-west coast of Johanna, about 8 miles from its south extreme, and about 12 miles from the north-west point of Saddle island. Pomony may be known from seaward by being under a saddle in the high land, and by two peaks like dog's ears, which are immediately over the harbour; also by the bright verdure of a sugar estate, and by the factory with its white square chimney, the harbour's mouth being about three-quarters of a mile north-westward of the factory.*

Pomony harbour is very small, but has from 15 to 5 fathoms water, black sand, throughout. The anchoring space may be about 2½ cables in length, and 1½ cables in breadth. The reef side is steep, and the shore side shelving. By choosing a place, vessels may in case of necessity lie on shore here, as in the case of the I.N. steamer *Semiramis*, which was beached for repairs. This harbour will safely contain 5 or 6 small vessels if properly moored, but vessels of over 200 feet long should not enter the harbour, there not being space enough for them to moor with sufficient scope.

The South-east Reef dries entirely at low water springs; at its northern extremity is a beacon consisting of an iron pole and basket, white-washed; this beacon—if in existence—may be passed within a boat's length on its western side, but should have a little wider berth on the harbour side. There is a boat channel from the head of the harbour out to sea, or to the river off the factory, but this is practicable only when the sea is smooth.

The North-west Reef only partly dries at low water springs. There is a boat channel to sea inside this reef which is practicable in all weather, the sea in rough weather being always broken by the outer and shallower part of the reef.

The Coral Shoal in the middle of the entrance to the harbour is abreast of the outer point of the north-west reef: it is about a cable in extent north-east and south-west, with depths of 5 to 2 fathoms on it, except on its south-east edge, where there is only 6 feet at low water springs.

This centre shoal does not generally show well, and is very treacherous for boats, a solitary surf sometimes breaking at long intervals. Two of the *Brisk's* boats were capsized here; on one occasion when the water appeared tolerably smooth a surf rose and turned the whale boat end over end.

Directions.—In the absence of a pilot, and without local knowledge, the safe plan will be to buoy the centre shoal and the extreme of the south-east reef. In proceeding in the course between the reefs will be about N. by E. ½ E.; when abreast of the extreme of the south-east reef haul sharp round to the south-east into the harbour. The channel between the south-east reef and the centre shoal is about 100 yards wide. There is also a deep channel between the shoal and the north-west reef, but it is very narrow, and should not be used except on emergency.

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* *See* plan :—Pomony harbour, on chart of the Comoro islands, No. 2,762.

Observe that when there is much swell the surf rolling over the reef into the harbour causes a considerable outset in the channel. The reef on the starboard hand in entering is steep-to, and distinctly visible to the eye.*

The harbour being very small, care is required not to enter with too much way, so as to be able to turn short round the extreme of the south-east reef. The anchorage is limited, and vessels likely to remain at Pomony should keep the factory chimney on a N.E. by E. bearing, and not anchor in less than 12 fathoms. It is desirable to moor about mid-channel between the shore and the reef: for this purpose observe a diamond-shaped beacon on the beach near the factory; this beacon brought on with a remarkable and outermost cocoa-nut tree (also on with a small rock on the beach at the head of the harbour) denotes the middle line of the harbour.

Vessels should moor with open hawse to the S.E. or N.W. according as it is the southerly or northerly monsoon. The *Brisk* generally moored with 50 or 60 fathoms each way, with the mooring swivel, particularly during the north-east monsoon. When moored in the harbour the south extreme of land bears S. 32° E.; the sugar factory S. 41° E.; the south (visible) extreme of Mohilla West; and Comoro mountain just open of the north-west extreme of land, about N. 49° W.

Winds.—During the north-east monsoon the harbour is quite smooth, and at low water it is as smooth as a dock at all times of the year: during this (the north-east) monsoon strong gusts of wind come down occasionally off the land. During the S.W. monsoon the harbour is generally smooth enough for all purposes, but when strong southerly or south-westerly winds occur at spring tides, although all heavy sea is broken by the reefs, sufficient swell rolls in at high water to cause a confused boiling sea, and to make dry landing impracticable: if it were to blow really hard from that quarter at high water springs, the harbour would be unsafe, unless special precautions were taken, such as placing an anchor close over to the weather side of the harbour, so as to lie with the scope of a whole cable; but the south-west monsoon rarely blows home with force, and there are no reports of its ever having amounted to a gale.

Whilst, therefore, the harbour may be considered safe and available at all times of year, vessels lying here in the strength of the south-west monsoon during spring tides will do well to be prepared.

Capt. T. Le H. Ward, H.M.S. *Thetis*, in May 1875, writes:—All along the south-west coast and at the harbour of Pomony, the rollers are now very heavy, and rain almost incessant.

During the north-east monsoon light land and sea breezes generally prevail, and occasionally shift from one to the other several times during the day; care is therefore required in entering Pomony harbour under canvas, although in case of necessity a vessel may anchor in from 12 to 17 fathoms, inside the coral shoal: outside it there is no anchorage, unless it be on the outer part of that shoal in 4 or 5 fathoms coral. At this time of year there is no difficulty in going out under sail if a proper time is chosen, but it should not be attempted unless the land wind is steady. During the south-west monsoon sailing vessels will frequently have to wait some days for an opportunity to get out.

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* Nav. Sub-Lieut. E. H. Richards, H.M.S. *Magpie*, Nov. 1872.

Tides.—It is high water at Pomony, full and change, at 4h. 0m.; ordinary springs rise 11 feet, and neaps 9 feet; neaps range about 6 feet. The equinoxial springs rise 13 feet, and the same rise not unfrequently occurs at other times of the year.

Water.—There is a very good watering place at a stream which runs into the sea near the factory; here the water is excellent and may be made to run into the boat by placing a starting hose a little way up the rocks past the bridge. In smooth weather boats can proceed across the reef from the harbour and enter the river towards high water, but when there is any swell they have to lie outside the surf with a great length of hose and must return to the harbour by the ship channel: of course when there is much surf landing at the river is impracticable, but this is of rare occurrence.

There is also a stream running into the sea at the northern part of the harbour, with a deep pool inside: this is very convenient for washing clothes or a ship's company's blankets and bed ticks, but it comes from marshy ground and is probably not wholesome for drinking.

Supplies.—Cattle and other supplies are plentiful, the latter being brought round from Johanna town when required in any quantity.

POMONY OUTER ANCHORAGE. — There is good anchorage about three-quarters of a mile to the south-eastward of Pomony village, with the factory chimney bearing N.E. by E., on which bearing a vessel will be at right angles to the sea face of the building and its two doorways can be seen through. The anchorage here is in 14 fathoms, at about a quarter of a mile from shore, and room to lie with a whole cable if desired: there is also said to be anchorage in 30 fathoms, at half a mile from shore.

Strangers approaching this anchorage should steer for the factory on about the given bearing, as on the north-west side the reef extends 2 or 3 cables from shore, and on the south-east side there are some detached rocks, the largest of which only covers at high water.

This anchorage being immediately abreast of the river is very convenient for ships calling for water during the north-east monsoon; at the other time of the year, vessels will generally find this anchorage practicable, but they should be prepared to slip on appearance of strong winds or heavy swell.

The South Point of Johanna is bluff and of considerable height; this end of the island does not form an acute point, but is 4 or 5 miles across; in rounding it several points will successively appear. The southern extreme of Johanna is surrounded by a reef which extends off from three-quarters to one mile: there are two islets close to the shore about a mile to the eastward of the southernmost part. During the southerly monsoon there is occasionally a very heavy sea off this point; at times it has been found rolling heavily as if the water were shoal, but no soundings were obtained.

East Coast.—From the southern extreme of Johanna the land trends N. 15° E., about 7 miles to a bluff point, and thence N. 4° W., about 10 miles to the north-east point. The coast on this side is high and rocky, near the sea, and has scarcely any indentations; it is apparently steep-to, but this being usually the weather side of the island it is not desirable to approach too close.

There are said to be soundings all along this coast, probably deep soundings only. Coral reef skirt the coast in places, with channels between them for boats and small vessels. Between Demony and the north-east point the reefs cease altogether in places and the coast is then very steep; the reefs recommence at the north-east point.*

Demony is, we believe, a small dhow harbour within the reefs on the east coast.

On the east side of Johanna, about 16 miles by sea from Johanna town, is a large sugar estate belonging to the Sultan with a large stone factory, and all the machinery necessary for making sugar. There is said to be good anchorage off the factory in 8 to 15 fathoms, 3 or 4 cables from the shore, at all times of year except August and September, when strong N.E. winds prevail. A barque was at anchor there in March 1874.

MAYOTTA,† next to Johanna in size, lies to the south-eastward of that island, leaving a channel between it and the outlying reefs of Mayotta 29 miles wide. This island is of irregular form, 21 miles north and south, with an average breadth of 6 or 7 miles, but if we include the dangerous reefs which surround the island, the whole occupies a space of 30 miles north and south, and 24 miles east and west, and is contained between the parallels of 12° 34′ and 13° 4′ S., and between the meridians of 44° 58′ and 45° 22′ E. The island is remarkable from all points of view, owing to its very uneven surface; volcanic-looking peaks rise in all parts, the highest of which is Mavégani mountain, which rises 7 miles from the southern extreme of the island; it has two peaks close together, of which the westernmost is the higher, being 2,164 feet above the sea.

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* Vicomte de Langle, 1861.

† *See* Admiralty chart:—Mayotta island, with views, No. 2,741; scale, *m* = 0·7 inch.

The most remarkable mountain is Uchongui, a sugar-loaf peak, which rises from land of inconsiderable elevation, at less than 3 miles from the southern extreme of the island, 2,105 feet high.* Mayotta when. seen bearing West, at about 40 miles' distance, makes like two islands, the higher part appearing to the southward;† from the southward Uchongui mountain will be seen before any other part.

Mayotta is said to contain about 8,000 inhabitants, of a race similar to the other Comoro islanders. It is a French colony, with a small military and naval establishment at Zaudzi. The island is capable of cultivation in most parts; eight sugar estates on the eastern part are worked with profit, but labour is in great demand. In 1855, there was no cultivation on the western side of the island, but roads were being made to it.‡

The Climate of Mayotta has the reputation of being very unhealthy; the shores of the main island are lined in places with mangrove swamps, which uncover at low water, and are productive of malaria and fever. In this respect, as well as in others, Mayotta differs from the other Comoro islands, which are generally considered healthy.

Pilots. — There are Government pilots who reside on Pamanzi island, and will generally come off to ships about to enter by the Bandéli passage, if the signal is made. For the other passages no pilot can be procured, as they are out of signal distance of Pamanzi.§

OUTLYING REEFS.—Mayotta is surrounded by a chain of reefs which extend from the main island on the north, north-east, south-east, and south sides between 4 and 5 miles, and on the west side upwards of 8 miles; besides which, to the north-west there is a detached reef 8 miles from Zamburu, and 11½ miles from the main island. This last reef is about a mile in diameter, with 2¾ fathoms water on it, and its centre bears about N.W. ½ W. from the high part of Zamburu.*

The circle of reefs round Mayotta has about 14 passages through it, most of which are deep enough for all sized ships, and will be hereafter described; the passages generally used are the Zamburu on the north-west, and the Bandéli on the east side. These reefs, whilst forming spacious sheltered anchorages and secure ports in all directions, are most dangerous to ships approaching the island without due caution, owing to their great distance from shore, and the uncertain currents which prevail in the vicinity.

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* French Survey, 1842. † Captain W. L. Castle, R.N., 1837.

‡ Commander H. G. Morris, R.N.

§ *See* plan of Pamanzi island, on chart No. 2,741.

The reefs are generally visible by the discolouration of the water, which when the sea is calm is in many places the only sign of danger, their outer edges being very steep with no bottom at 50 fathoms close alongside. There is, nevertheless, a bank of deep soundings on the west side of the island, extending nearly 2 miles beyond the reefs, where in case of necessity vessels being drifted towards the reef might bring up.* Inside the reefs the soundings on the eastern side of the island are from 15 to 25 fathoms, and from 25 to 40 on the western side.

Currents.—In the vicinity of Mayotta island the current is very variable. This island appears to be to the southward of the general westerly stream which flows past Johanna. Between Mayotta and Johanna, the current is generally to the south-west, but at times sets to the south-east with considerable strength: during calm and variable weather H.M.S. *President* was set from the north-west to the south-east part of the island (round the east side), in two days.† About the south end of Mayotta an easterly current is very common.

ZAMBURU or Saddle island, which is separated 2½ miles from the north-west end of Mayotta, is about a mile in diameter and over 1,000 feet high. The saddle appearance of the top of the island is most visible from the north-east and south-west; this island is somewhat similar to Saddle island, Johanna, but much larger and higher. Between Zamburu and the main island are the two Choazil islets; they are small, but visible 12 miles.

ZAMBURU PASSAGE.—Approaching Mayotta from the north-west, Zamburu cannot be mistaken; if approaching to the northward of the outlying shoal, keep Zamburu peak bearing to the southward of S.E. ½ S., which will give the shoal a berth of a mile. Bring and keep cape Duamuñi on with Second summit (the south-western peak) of Pamanzi S.E. ⅓ S., until Zamburu peak bears West; then steer East until Congo point is in line with Second summit of Pamanzi S.E. ¾ S. Observe, however, that Congo point is not the extreme of land as shown in ketch C. on the chart; there is a point beyond it—ill defined on the chart —which a stranger is apt to mistake for Congo point. Mokaoen point, which *is* the extreme land, must be made to overlap Second summit of Pamanzi as much as Second summit appears above it.

The above marks will carry a vessel in the fairway between the narrows, and continuing that course Prévoyante shoal should be left on the

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[*] Vicomte de Langle, 1861.

[†] J. T. Russel, Master, R.N., 1846.

right hand (going in). When Morne hill—at the north end of Mayotta—comes on with Zamburu peak N.W. by W., keep them so and steer S.E. by E. A vessel may then pass close to Aombé island, which is steep-to on its west and south sides, and thence pursue a mid-channel course into Pamanzi bay, or round to the anchorage south-west of Zaudzi. In rounding Zaudzi spit, do not haul to the southward until the four Nossi Effatsi islands open westward of Mognaméri island.

In entering Zamburu passage with the leading mark on, between Zamburu and North reef, there are shallow soundings, over a space of about a quarter of a mile, and apparently good anchoring ground. This bank is a mile in extent N. by E. and S. by W., lying right in the fairway with as little as 4½ fathoms water; at its north and south extremes there are 6½ fathoms. The bank may be dangerous in parts for vessels of heavy draught.*

Buoys.—There is a buoy on the edge of the shoals off cape Duamuñi, and one on the south point of the North-east reef opposite to it. After passing between these buoys, there are two more between which a vessel should pass; these are placed on the edge of shoal patches, of which there are two on the left hand, and two or three on the right, about half a mile from the south end of the north-east reef. There is also a buoy on the Prévoyante reef.

These buoys are pyramidal, and are said to be white on the starboard hand, and chequered black and white on the port hand, in entering. The shoals are plainly visible towards low water.

DUAMUÑI PASSAGE, or North-east passage, appears clear for vessels of any size.* To enter this pass, bring cape Duamuñi on with Muruamu-Be mountain S.S.W. ⅛ W.; which will lead in between the North and North-east reefs, and when Congo point comes nearly on with Second summit of Pamanzi, proceed as directed for entering the Zamburu passage.

Choazil Islands Passage lies with the northern Choazil island on with Morne hill E. ⅜ S. This passage appears to have only 5½ fathoms water, mid-channel, and is about half a mile wide between the reefs.

Great Western Passage is wide, easy of access, and safe. To enter, bring Red mount (a hill with a red patch near the sea) on with Combani mountain E. by S. Combani mountain may be known by the sugar-loaf appearance of its summit, and by its being on the nearer range of mountains.

If bound to Boëni bay, proceed as above until East point (of the Boëni peninsula) comes on with Uchongui peak S.S.E.; then steer on the latter course, and when a mile or more distant from East point, haul into the bay with Caroni island S.E., which course will clear the reefs off East point.* Acua point (remarkable for a small green hillock) on with the peak of Zamburu, leads to the westward of a reef which lies W. by S. ⅛ S. about 2 miles from Red mount.*

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* Vicomte de Langle, 1861.

Boëni Passage lies with Boëni point on with the easternmost peak of Mavégani monntain bearing East, northerly. This passage is about half a mile in breadth, and its distance from shore renders Boëni point difficult to distinguish from the other land.*

Boat Passage is probably so called from its being very narrow, but it has water for all classes of vessels. The leading mark is Cani point, between Cani hill and Uchongui mountain, bearing about E. ¼ S.* This passage should not be attempted without a pilot, on account of its narrowness and distance from shore, and because a considerable space inside the reef does not appear to have been examined.

SAZILEY PASSAGES are three in number, divided from each other by coral flats, the southern of the two flats being crowned by a sand bank, which uncovers at one-third ebb. These passages are not much frequented, but they have sufficient water for all sized vessels.*

South Saziley Passage is wide and good. To enter, bring a distant tuft of trees to bear W. by N. ¾ N. and over Dapani point. Buni island bearing W. ¾ N. will also lead in. Buni is at the south extreme of Mayotta, and when seen from outside the passage, it has the appearance of a low hill joined to the main island.*

Middle Saziley Passage lies with the sugar-loaf part of Uchongui mountain just open to the southward of Morne Carré, about W.N.W. This passage has 7 and 8 fathoms water.*

North Saziley Passage is the narrowest of the three. The leading mark between the reefs is the sugar-loaf part of Uchongui mountain, just open to the northward of Morne Carré, about W. by N. This mark takes a vessel rather close to the coral reef on the port hand going in.

BANDÉLI PASSAGE is about 5 miles to the southward of Pamanzi island, and is the usual one for vessels from the eastward. There is a whitewashed obelisk on Mavégani mountain, which serves as a distant mark, and leads to the entrance of the pass when bearing W. by N. ⅝ N. To enter, bring a conical white beacon erected on the cliffs immediately above White rock—which rock is difficult to distinguish—in line with a white conical beacon on Morne X, bearing about W. by N. ⅝ N., taking care not to open Morne X beacon to the northward on first entering the passage, nor to open it to the southward at the inner end of the passage.

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* French, M.S.

When the sugar-loaf peak Uchongui comes on with the north end of Bandéli island, about W.S.W., a vessel will be within the reefs, and may haul up to the northward for the west end of the westernmost Ajangua islands; pass these islands at the distance of half a cable or more, and then steer so as to pass eastward of Buzi island, giving the islet off the latter also a berth of half a cable. If preferred, a vessel may pass to the westward of Buzi, but in this case give its south-west end a berth of a quarter of a mile, to avoid an outlying reef, and pass within a quarter of a mile of its north side to avoid the patches of coral which extend southward from Choa point.

The mark on Morne X is not very distinct to a stranger. In the morning, when the sun is behind you, the reefs will show well, but be careful not to mistake False passage for the Bandéli, the former being about 2 miles to the south-westward of Bandéli pass.

Buoys.—Bandéli passage is marked by three buoys on each side, but the colours of the buoys are undistinguishable. Besides these, there is a black buoy on the eastern edge of the reef off Ironi point, westward of Ajangua islands.

Longorori Passage is a narrow cut in the reef, about 3½ miles southward of Pamanzi island; it is clear and has plenty of water, but it is winding; and when inside, the navigation is obstructed by coral patches. This passage is not recommended except for boats.

PAMANZI ISLAND, about 1¼ miles from the eastern side of Mayotta, is about 3¼ miles north and south, and more than 2 miles east and west; it has several hills, the eastern one, on which there is a signal station, being 782 feet high; when seen at a distance, Pamanzi makes like a saddle. The reef on the eastern side of Pamanzi does not appear to extend more than half a mile; not so much in places. At the north-east extreme of Pamanzi there is a lake, apparently the centre of an extinct volcano.

ZAUDZI ISLAND lies to the westward of and is connected with Pamanzi by a neck of sand, on which a causeway has been constructed. The French establishment is on this island, and consists of a governor and colonial officers, some artificers and seamen, and about 100 soldiers, besides a few native ones. There are a few substantial government buildings and storehouses, and numerous huts. The semaphore at Zaudzi is in lat. 12° 46′ 35″ S., 45° 16′ 0″ E.

Water.—There are two wells on Zaudzi, but the water is not good. The establishment is supplied from the main island, the water being brought over in casks.

Supplies are scarce; poultry and vegetables may be obtained in small quantities only, and cattle from the main island; the latter are imported to Mayotta from Comoro and Mohilla. A government supply of provisions is kept here for the troops and for the French cruisers on this station.

Coal is stored at Zaudzi (Pamanzi) for the use of French vessels of war, and small quantities can usually be obtained.

Mails.—The British India Steam Navigation Company's vessels, running between Zanzibar and Madagascar call at Zaudzi, Mayotta island, once a month each way.

ZAUDZI SPIT extends nearly 4 cables westward of the north end of Zaudzi; its extreme is usually marked by a white buoy. To clear the west extreme of this spit, keep the four Nossi Effatsi islands open westward of Mognaméri island.

Orestes Rock was discovered by H.M.S. *Orestes* in 1862, and singularly enough it lies just in the usual anchorage. Orestes rock lies about 3 cables from shore, with the jetty lantern on with the lightning conductor on one of the government buildings.*

From the *Orestes*, when lying close alongside this rock, the west extreme of Mognaméri island bore N. 5° E., and the west extreme of Bouzi island S. 55° W.† It is a cone of coral not more than 12 yards in diameter at its base, rising to two sharp pinnacles, which are so small that the lead can hardly be placed on them; these pinnacles have only 10 feet water on them at the lowest spring tides, with 4 or 5 fathoms all round at 25 yards distance. A buoy marks the shoal.*

The anchorage is good everywhere to the southward of Zaudzi spit, by avoiding the Orestes rock. A good berth will be in 11 fathoms, mud, with the west extreme of Zaudzi N. by E. ½ E., and the south extreme of Pamanzi S.E. by S.

The best anchorage during the southerly monsoon is in Pamanzi bay, which at that season is very smooth. It is all clear except a coral shoal about 1½ cables to the north-east of Zaudzi island, on which is a black nun buoy. A berth will be found in 7 fathoms, with North point N.E. by E., and Second summit of Pamanzi S.E. ½ S.

Tides.—It is high water at Zaudzi, full and change, at 4h. 10m.; springs rise 12 feet.

GEYSER REEF is a dangerous group of rocks and sand banks in the form of a crescent, convex to the north-westward. The south-east, extreme is in lat. 12° 26′ 30″ S., long. 46° 28′ 44″ E. (or 2° 6′ 44″ east of Johanna town); the north-east extreme of the rocks which uncover is in lat. 12° 20′ 45″ S., long. 46° 27′ E., and their west extreme in long. 46° 24′ E., but to the north-eastward of the north extreme a bank or shoal projects to lat. about 12° 17′ S., curving to the eastward to long. 46° 31′ E., thus forming a horse-shoe open to the south-east. We are not informed as to the depth on this bank, but Mr. Richards describes it as a barrier of shoal water which they considered dangerous to cross in H.M.S. *Geyser*. Inside the horse-shoe the depths are from 17 to 20 fathoms.*

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* French Hydrographic Notice, 1863.

† Captain A. H. Gardner, R.N., 1862.

The ship *Shannon*, when bound to Aden with coals in 1842, was wrecked on Geyser reef. Captain Tuckett of that ship describes it as a dangerous reef extending E.N.E. and W.S.W., with numerous rocks, most of which dry at low water, many being visible at half ebb. At three-quarters ebb they counted seventeen rocks, large and small, above water, besides some dry sand-banks, the largest rocks appearing about the size of boats under sail. There are several swash-ways between the reefs, with apparently deep water. Remnants of other wrecks appeared bedded in the sand.†

The Geyser reef has been so named in consequence of having been partly examined by H.M.S. *Geyser* in 1848. It was originally discovered by the ship *Firebrass* in 1682, and afterwards seen by the *Devonshire* in 1766. In 1831 the whaling barque *Rover* saw this shoal and described it as extending E.S.E. and W.N.W. about 10 miles, of which 4 or 5 miles uncovered at half ebb, and the other parts were conspicuous by high breakers.‡ In 1832 the whaler *Borneo* was wrecked on one of these shoals, giving its position in lat. 12° 11′ 30″ S., long. 46° 24′ E.,§ but they were doubtless out of their reckoning.‖

From the similarity of the descriptions of these reefs by the above ships, and in accordance with the opinion of Mr. Richards, master of the *Geyser*, we conclude that in all probability the dangers hitherto reported under the name of Firebrass, Borneo, Rover, and Bisson are all included in what is now called Geyser reef, and that there is no danger beyond the above-given limits of that reef. Observe, however, that this assumption is not as yet proved, and that until a further examination of these dangers has been made, much caution is necessary when in their vicinity.

CAUTION.—The neighbourhood of Geyser reef may be considered the most dangerous part of the Mozambique channel. In fine weather, at high tide and smooth water, when the sea does not break, there is even by day little warning of danger, except by a good look out and carefully sounding with the deep sea lead: on the north side of the shoal it is uncertain whether the lead will give any warning.

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* J. Richards, Master, R.N., 1848.

† Captain H. Tuckett, 1842.

‡ Horsburgh.

§ Captain Polkinghorne, R.N., 1832.

‖ Raper gives the supposed position of Borneo shoal, lat. 12° 14′ S., long. 46° 12′ E.

This reef, being on the southern verge of the great westerly current, is sometimes included in the course of that stream, but more frequently a counter current to the north-east prevails.

ZÉLÉE BANK extends 14 or 15 miles to the south-westward of Geyser reef with depths varying from 30 to 5½ fathoms, the shoalest part being apparently near its southern extremity.* We have no information of any danger on this bank; its extent northward does not appear to have been determined.

CASTOR BANK.—The portion of this bank discovered by H.M.S. *Castor* in 1852 lies between latitudes 12° 49′ and 12° 57′ S., and longitudes 47° 36′ and 47° 46′ E., with soundings from 25 to 7 fathoms, sand and coral; the latter depth was the shoalest part the *Castor* passed over, and is in lat. 12° 52′ S., long. 47° 41′ E. From the mast head, as far as the eye could reach, the sea appeared much discoloured, as if shoaler water existed; large ships had therefore better avoid the vicinity of Castor bank at night time, and not approach it without caution by day.†

LEVEN BANK.—The position assigned to this bank by Owen is between latitudes 12° 22′ and 12° 44′ S., and longitudes 47° 47′ and 47° 57′ E., with soundings of 40 to 20 fathoms, and 16 fathoms near the southern part. H.M.S. *Pylades*, in 1837, passed over the south end of this bank, obtaining 13 fathoms in lat. 12° 38′ S., long 47° 43′ E. American whalers report having found 9 fathoms water on it, but that was probably on what is now called Castor bank, which, not unlikely, may be a continuation of Leven bank.

INTERMEDIATE BANK.—A bank of soundings was found by Owen to the eastward of Leven bank, in lat. 12° 24′ S., long. 48° 25. E.; there appears to be about 20 fathoms water on this bank.

GLORIOSO ISLANDS are two in number, besides a smaller one called isle Verte, and some other islets and banks, all uninhabited.

These islands appear to lie on the same coral reef, which extends east and west about 15 miles, with a breadth of about 5 miles; this space is filled with small islets, sand banks, and lagoons, with apparently no passage through it. The sea breaks with violence on the reef, and no soundings were found with 100 fathoms of line at one mile from it. These islands are sandy, about 15 feet above the sea, and are covered with brushwood and trees about 25 feet high;* they should on no account be approached by night, and their vicinity is best avoided by day from the eastward, unless there is a commanding breeze, on account of the strength of the current.

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* French Survey, 1853.

† G. J. Hodges, Master, R.N., 1852.

H.M. brig *Snake* found safe anchorage between the reefs in 15 fathoms, good holding ground (apparently on the north side), the soundings being from 20 to 9 fathoms. Turtle are plentiful, and fresh water may be obtained, but it is scarce.†

Glorieuse Island, the western of the group, in lat. 11° 34′ 50″ S., long. 47° 21′ 43″ E., is about 1¼ miles long by one mile broad, with a reef extending from its west end. A small basin, which has 7 fathoms water, is formed in its eastern end by a curve in the sand-bank; a small vessel might probably find shelter here, but the bottom is rocky and uneven.*

Isle du Lise, the eastern island, is about a mile in length; beyond which the reef extends a considerable distance to the eastward.* This island, when bearing South distant about 10 miles, makes like three small hummocks with cocoa-nuts or palms between them.‡

Isle Verte is on the reef between the two main islands, but more to the southward than either of them. Passing about 3 miles to the southward of these islands, isle Verte appeared to be a rock with a house about 25 feet high on it: this house is apparently the highest object on the islands.§

Tides and Currents.—The rise and fall of tide is about 10 feet. The current in the vicinity of these islands sets strong to the westward.

ASTOVE ISLAND, the centre of which is in lat. 10° 6′ 30″ S., long. 47° 42′ E.,* is a small low island upon which the French ships *Le Bon Royal* and *La Jardiniere* are said to have been wrecked.‖ We have no other information about this island.

COSMOLEDO is an atoll or coral formation of oval form, 9½ miles east and west, and 7 miles across. Eight low coral islands and many islets lie on the ring surrounding the central lagoon, which is shallow and in most places much encumbered by rocks. The edge of the reef is everywhere steep-to, and on an average a quarter of a mile outside the islands.¶

There are two passages through the reef: one leads into a shallow part of the lagoon; the other is narrow, ill-defined, and, moreover, on the weather side during the south-east trade, when a heavy swell sets into it. During the other part of the year it might possibly be used by a vessel drawing 16 feet water.

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* Owen.

† Commander T. B. Brown, R.N., 1846.

‡ J. A. R. Petch, Master, R.N., 1860.

§ Captain R. A. Powell, R.N., and W. S. Luke, Master, R.N., 1858.

‖ Horsburgh.

¶ The information relative to Cosmoledo, Assumption, and Aldabra islands, is by Com. Wharton, H.M.S. *Fawn*, 1878.

Cosmoledo is a dependency of Mauritius, but is uninhabited, there being no water. It is visited from Seychelles in search of fish and turtle, both of which are abundant. The *Fawn* turned 15 turtle in three nights, in July 1878, which is late in the season.

Menai Island is 1¾ miles in length, and the largest and westernmost of the group. In the centre are tall mangroves, which reach 60 feet above high water; at the south end a clump of trees form an apex 45 feet high, and on the north-east part there is a ridge of sand hills about 40 feet high, with stunted casuarinas on it; elsewhere the island is low and covered with thick bush with open grassy spaces. A few cocoa nuts have been planted near Johannes point, but (1878) are still small, and do not show to seaward. Wild goats and fowls are reported on the island, but were not seen by the crew of the *Fawn*.

Johannes point is of rock, appears to project considerably when seen from the southward, and has two trees standing alone on its extremity. During the south-east trade landing can be effected at high water in the bay to the northward of Johannes point, and even at low water by landing on the higher outer edge of the reef and wading, but at times there is too much swell for this.

Anchorage.—The only anchorage outside the reef during the south-east trade is on a narrow strip of soundings a little northward of Johannes point. The *Fawn* anchored in 13 fathoms, coral, with the right extreme of Menai island S. 21° W., the left extreme S. 73° E., Observatory islet showing just clear, and the trees on Johannes point S. 16° W. The vessel's stern was in 40 fathoms when swung off from the island, but the anchor held well with fresh winds from south-east.

The currents were strong here; the ebb sets to the north-east, augmenting the ordinary set of the equatorial current round the island. The flood at neaps barely neutralized the set, at other times it ran to the south-west.

At this anchorage the sea is smooth, with but very little swell. If desirous of entering the lagoon from here in a boat, the best passage over the reef is just to the north of Middle islet, where there are 3 feet, at high-water neaps.

Observatory Islet, to the eastward of the north part of Menai island, is in lat. 9° 41′ 20″ S., long. 47° 32′ 28″ E.

Tides.—It is high water at Cosmoledo, full and change, at about 4h. 0m.; springs rise about 8 feet, neaps range 2 feet.

North Islands are two islands together, of which the western is half a mile long, 25 feet high, rocky and covered with bush; the other is small and low.

Goelette Island, to the north-east, is very low and half the size of the western North island, from which it is distant 4¾ miles.

Polyte Island, the easternmost island, is a mile long north and south, and has a small hummock at its southern end.

Wizard Island, at the south-east corner of the group, is 2 miles in length, with a hill 55 feet high at its north end, where two or three white sand spots show through the bushes. The island is covered with bushes, but no trees. Off the south-east corner are indications of anchorage ground for the north-west season, but it could not be sounded by *Fawn*. On this island the *Merry Monarch* was wrecked in 1874, on her way from India to Boston.

Pagoda is a small low island.

South Island is 1¾ miles in length, with some sand hillocks, covered with bush, and towards the western end are some high mangroves; it is the southernmost island.

South-East Passage is midway between Wizard and Pagodo islands. A 6-fathom channel, about 250 yards wide, leads in a general direction N. ½ W. for half a mile; it is then divided into two by a reef awash at low water, and the eastern channel runs with a depth of 3½ and 4 fathoms, for 1½ miles farther to the N.N.E., but it is not straight, and the eastern reef is the plainest. It then opens into the clearest part of the lagoon, which has a depth of 3½ and 4 fathoms.

Caution.—This passage from its shallowness is not at all easy to distinguish from the adjacent shoals, as the reefs at the sides are not steep-to. The water is so clear that the bottom, 5 fathoms deep, is almost as distinct as it is at 2 fathoms, and it cannot therefore be recommended.

During the south-east trade, the wind and sea set straight into it, and although the water becomes smooth after passing the line of breakers, it is very rough at the entrance. In the north-west monsoon season, it is practicable with care for a vessel drawing 16 feet. The tides are strong in the passages.

South-West Passage, between South and Menai islands, is about the same breadth and depth, and rather steeper on either hand than the above, but it unfortunately leads into a very shallow and foul part of the lagoon, and is therefore useless except as a boat passage. In the south-east trade it is tolerably smooth at the entrance, but the sea is sideways.

The Lagoon is much encumbered with shoal patches and banks, but there is a tolerably clear space towards its north-east side with 3½ and 4 fathoms water.

ASSUMPTION ISLAND, nearly 3½ miles in length, is low and covered with tangled bush, except some sand hills on the south-east side, the highest of which is about 60 feet above the sea. The island appears steep-to on all sides with but little reef, though discoloured water extends about a mile off the south-east point with apparently 10 fathoms or so over sandy bottom.*

The hummock near the south-east extreme is in lat. 9° 46′ 20″ S., long. 46° 31′ 10″ E.

Anchorage.—The *Fawn* during the south-east trade found very indifferent anchorage in 13 fathoms, sand, with the right extreme of the island S. 54° W., top of the highest sand hill S. 11° E., and the left extreme of the island N. 23° E. Here there was not room to swing, but there was no current, and the vessel lay head to wind in perfectly smooth water, with 28 fathoms under the stern.

The island is uninhabited, but there were signs of fishing parties, and in July, turtle were swarming.

ALDABRA, the largest of the islands to the north-west of Madagascar and a dependency of Mauritius, is an elevated atoll or coral formation, 19 miles east and west, and 7½ miles across, with a nearly continuous chain of islands on the reef. Aldabra is useless for habitation; its surface is of sharp jagged coral with no sand on it, and covered with a thick tangled bush difficult to get through. Mangroves are everywhere eating the coral away inside the lagoon, and the clumps which grow in places to a considerable height give an appearance of tree-covered hills and fine forest.

In a few places casuarinas grow, and there are several sand hills on the south side. The true surface of the island is about 20 feet above high water, the sand hills do not exceed 50 feet, nor the highest mangrove clumps 80 feet. The fringing reef is everywhere narrow, never exceeding 3 cables from the shore, and is steep-to all round except to eastward, where a bank extends off some distance.

The island has probably never been inhabited, and perhaps never will be, but it is visited by parties from Seychelles for fish, turtle which abound, and also for the large land tortoise which in this island alone in all the Indian ocean still survives, but in very diminished numbers. The north-west monsoon, the best season for fishing, is also the mosquito season, when these insects swarm in intolerable numbers. Water is only to be obtained in the cavities of the rock where the rain collects, and only in a few places.

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* Com. Wharton, H.M.S. *Fawn*, July 1878.

The Lagoon is very shallow, being impassable at low-water springs, even for boats, except in places. The reef is broken in four places, but the passages are all shallow except the north-west, which is a navigable channel. Small vessels can pass through this latter channel into the lagoon, which has a limited space with 4 fathoms water, but the upper part of the channel is tortuous and narrow, and large vessels should anchor in the channel itself about 1½ miles from the entrance.

Anchorages.—In the south-east trade it is possible for a vessel to anchor off the western point of the island close to the reef, but the space here scarcely allows for swinging towards the shore, which may happen if the wind falls light or veers far to the southward.

A better place is off the eastern shore of the main channel, where a vessel may anchor in 11 fathoms, with the left extreme of Middle island S. 82° E., the right extreme of the east point of entrance S. 31° E., and the right extreme of West Island West. In this position a vessel will be in the line of the flood stream into the lagoon, but not the ebb which sets on the western side of the channel.

In the other season an anchorge will probably be found off Hodoul point, the eastern extreme, as several casts of 13 fathoms were obtained in the *Fawn* when passing half a mile from the shore, thougb circumstances did not admit of completing the soundings, but there was no sign of shoaler water here.

Main Channel.—The main channel into the lagoon is a deep canal leading between West and Middle islands, with the reef dry on either side at low water, and even at high water well defined. The entrance points are of rocky cliff with groves of thick casuarinas on them ; the channel which continues for 1¾ miles in a southerly direction, is about 260 yards wide, the sides steep-to, and the channel clear with from 7 to 12 fathoms water, when at the distance mentioned it is divided into two channels, both deep, but only half the breadth of the outer part.

The eastern channel runs in for 2½ miles, when it is lost at the entrance of the lagoon in innumerable patches of coral, with 3 to 5 fathoms between them, but too intricate for navigation. The western channel also leads into the lagoon, and is similarly lost in coral patches.

Throughout the channel and its different branches the tide runs with great velocity. At springs the stream runs 6½ miles an hour, with scarcely any slack water ; at neaps it runs 2½ miles an hour.

The Anchorage is in the main channel, outside where it divides, and about 1¼ miles from the entrance. A vessel should moor in about 9 fathoms :—coral, with Round Apex open to the south-east point of West island ; open hawse to the eastward without swivel and with a good scope of cable, the holding ground being bad, and the velocity of the tides rendering it not improbable that the anchors may start. The trade wind will generally cause the vessel to swing the same way and keep the hawse clear. It is perfectly smooth here, but the strength of the tide makes it a most inconvenient anchorage, especially for boats along the vessel.

Tides.—It is high water, at full and change, at 4h. 0m.; but the flood stream runs about 1h. 15m. after high water, and the same at low water. Springs rise about 8 feet, and neaps range about 3 feet.

West Island, like all the other islands, is covered with dense bush, and much broken and indented on the lagoon side by mangrove creeks and swamps. Its western shore is the only long sandy beach in the islands, and here the turtle lay their eggs. The observation spot on the eastern side in a sandy bay is in lat. 9° 22′ 35″ S., long. 46° 14′ 55″ E.

South Island, which extends the whole length of the group, a distance of 19 miles, is nearly all faced with low coral cliffs, about 15 feet high; this sea face is more barren than elsewhere from the spray and sand which is continually being blown over it. In a few places there are low sand hills about 50 feet above the sea; the remainder of the island is jungle with rocky surface and mangrove swamps, the tops of the mangrove clumps being 50 to 80 feet high.

West Channel between West and South islands is quite shallow, and only passable by boats at high water when the sea is smooth. It is interrupted by many small islets.

East Channel, between Middle and South islands, is passable at all times by boats; it is a narrow deep pass through the coral, about three-quarters of a mile in length, and the reef on either side is dry at low water.

Middle island is similar to the others, but with Casuarina trees on its extremities.

Cocoa Nut Island is the only suitable place for building a house. It lies in the lagoon opposite the east entrance, and has a sandy area with long grass, a small cocoa nut grove, and some fine casuarinas. The crew of the *Fawn* planted 50 cocoa nuts in 1878; there is no fresh water.

APPENDIX.

THE following information relative to Tanga, Lamu, and Manda bays, and Kisimayu bay (Refuge bay), is by Commander Wharton, H.M. Surveying vessel *Fawn*, 1878. Also, information relating to the coast between East London and Bashee river, by Navigating Lieutenant Robinson, H.M. Ship *Active*, 1877, received since this work has been in type.

TANGA BAY.

VARIATION 9° 25′ West in 1878.

TANGA is the largest town on the main land of Africa, in the vicinity of the Zanzibar islands. As Bagamoyo is the point of departure for caravans bound to Unyanyembe and the Tanganyika lake, so the trade for all the country to the northward as far as the Victoria Nyanza passes through Tanga. It stands on the south shore of a sheltered little harbour, to which a broad channel through the outer line of reefs affords easy access with the aid of the chart.*

The river Zigi (called Mgambo at its mouth) falls into the northern part of Tanga bay, but is only navigable for a few miles on account of rapids; and the shallows at its entrance are impassable at low water. Above Amboni the river passes between some limestone hills, and the scenery becomes very pretty, which is unusual with African rivers so close to the sea.

COAST.—The shores in the vicinity of Tanga are thickly populated and dotted with villages, especially to the southward. These villages in many instances have small creeks leading to them, up which dhows pass at high water; the entrances to these creeks being merely breaks in the mangroves which line the shore are difficult for a stranger to discover.

If the weather is clear, the Usambara mountains which rise about 20 miles from the coast will be very conspicuous. Some of the distant peaks of this range must be nearly 10,000 feet high. During the south-west moonsoon, however, these mountains are frequently obscured by haze, or perhaps only the easternmost of them will be dimly seen.

At 17 miles northward of Tanga, and near where Bomani is marked in the chart, three rounded hills, the highest of which is about 1,000 feet above the sea, will nearly always be visible; and farther north near Waseen are two isolated conical peaks between 2,000 and 3,000 feet high, which in clear weather will be plainly seen from off Tanga. The land elsewhere is low and flat, with the exception of the Amboni hills, which are immediately to the north-west of Tanga and serve well to mark its position. These hills, about 500 feet high, are rounded and present no defined summit, but there is a well marked saddle between the two southernmost and highest eminences, which serve as one of the leading marks for entering.

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* *See* Admiralty chart:—Tanga bay (or Kokwane harbour) and approaches, No. 859; scale, $m = 1 \cdot 92$ inches. To be published in about January 1879.

There are several islands off this part of the coast, which are all low and densely wooded. In clear weather they are at times difficult to distinguish from the main land, but with any haze they appear distinct. Karange, 8 miles to the south of Tanga is the southernmost of these islands; Yambe, the next to the northward, will be known by a high group of trees towards its northern extremity. The islands to the north of Tanga are so close to the shore that they are difficult to distinguish until near the outer reefs.

Rás Kasone the south point of Tanga bay is cliffy, but covered with vegetation which conceals the cliff everywhere, but in one spot about half a mile to the southward of the point, where, with the sun to the eastward a piece of red cliff shows very distinctly. A low line of mangroves surrounds Rás Kasone on all sides.

The north end of Tanga island is very similar to Rás Kasone, showing a bluff with mangroves stretching to the northward, but it may be distinguished from the latter by being bare and showing red. The reef around Rás Kasone is steep towards the north-east, but shoals off gradually for more than 3 cables to the north.

Dixon bank is a small coral patch with 3 fathoms water on it, lying E. by S. ½ S. 2 miles from Rás Kasone.

Outer dangers.—There is a nearly continuous line of outer reefs which run parallel to the land at varying distances, with navigable passages between them here and there. These reefs, with few exceptions, break at all times, and dry at low water; they are not always steep-to and should be given a fair berth.

Yambe reef on which is the island of the same name, is 3½ miles in length, and dries from one to 6 feet at low water. Between it and the northern end of Karange reef, is the entrance to a good anchorage, but as yet only partially examined. Inside Yambe there is only a boat passage. A small islet lies off the north end of Yambe, and is a good object for fixing a vessel's position. Between Yambe and Niule, the next reef to the north, is a wide passage, but as a narrow rocky ridge with 2½ and 3 fathoms water on it, joins these reefs, it is not advisable to take a vessel through it.

Niule reef is 2¼ miles in length, with its northern end bearing E. by S. distant 4¼ miles from Rás Kasone. It is of coral, dries in patches at low water, and a large sand cay, whose height varies with the monsoon, lies on the north-west side of the reef. Except at high tides, this sand cay is dry, but in rounding the reef it must be remembered that the cay is a long mile from the north end. The north-east edge of Niule reef shoals gradually off, so that care should be taken in rounding it and not trust to the eye.

Fungu Nyama is a large quadrangular shaped drying reef 2½ miles across east and west, lying 1½ miles to the north-east of Niule. A large sand cay lies near the centre, about the same height as the one on Niule reef, but of greater extent.

At a long half mile outside Fungu Nyama is a shallow ridge with only 2 and 3 fathoms water in it, which does not generally show.

Mwamba Wamba, another large drying reef, 2 miles to the north-east of Fungu Nyama, has also a sand cay on it, but not so high as that on Nyama. The passage between Wamba and Nyama is encumbered by several rocky patches, which have not been sufficiently examined to insure that they are not dangerous.

Ulenge island presents a featureless line of mangrove trees and rocky points, with a conspicuous islet off its south end. The island lies on the shore reef, which dries between it and mainland at low water.

Ulenge reef is a detatched patch barely awash at low water springs, lying 1½ miles to the southward of the south point of Ulenge island. The water is thick or discoloured around the reefs.

Tanga bay for a large part of its area is shallow, but there is ample room and depth of water between the island and town for many vessels. The water is discoloured, and the eye with reference to its navigation no guide. The southern shore of the bay is steep, being the edge of a plateau 50 feet above the sea. The town stands on the plateau half concealed in cocoa-nut and mango tree groves; the shores of the bay elsewhere are mangrove swamps.

Rás Chongoliani, the north point of the bay, has detached patches of reef exteding from it to the southward for 8 cables, narrowing the entrance of the bay. The channel into the bay between Fungu Nyama and Niule reef is deep and three-quarters of a mile wide.

A white pillar is building on the edge of the plateau to the east of the town to serve as a leading mark between the reefs of Tanga island and Rás Kasone.

Position.—The observation spot on Tanga island is in lat. 5° 4′ 45″S., long. 39° 6′ 55″ E.

Anchorage.—There is good anchorage anywhere abreast Tanga island, but it will be much cooler to anchor as far out as possible, as the plateau in the rear of Rás Kasone shuts off the wind in either monsoon, if a vessel is too far in.

A berth with the north extreme of the mangroves off Rás Kasone bearing E. ½ N., and the extreme of the mangroves off the north shore of Tanga island N.W., will be well protected.

Tides.—It is high water in Tanga bay, full and change, at 4h. 0m.; springs rise 12 feet, neaps 7 feet.

Supplies.—There is no better place on this part of the coast of Africa for supplies than Tanga. Meat is very good, and fish, vegetables, and fruit are abundant. There are many wells in the town and vicinity, but though the water in the former appears good they should be avoided, as they are nearly certain to be impregnated with sewage. The greater part of the cattle, sheep, and goats imported into Zanzibar is from Tanga.

Directions.—To enter Tanga bay, bring the right extreme of Ulenge island to bear N.N.W. ½ W., and steer for it. This bearing will lead through the channel between Niule reef and Fungu Nyama; when the north cliff of Tanga island bears W. ½ N. and just clear to right of Rás Kasone—if the weather be clear, the northern of three peaks in the front Usambara range, will be in line on this bearing,—steer for Tanga island on this line until the entrance of Mgambo river bears N.W. ¾ N., and is in line with the saddle between the southern summits of Amboni hills; then steer for the river until the north-west cliff of Tanga island bears W. by S. ¼ S.; when alter course to West until the white pillar bears S.S.W. ½ W., which bearing will lead to the anchorage.

Shelter may be obtained in either monsoon under the lee of the outer reef, should it be desirable not to enter Tanga bay.

Kwale bay.—At 2 miles to the northward of Tanga bay is another sheltered anchorage named Kwale bay. The entrance is clear of dangers, but the shores of the bay are all mangrove, and bordered by shallow water. There are several villages in the bay, but nothing to attract a vessel under ordinary circumstances. There is a passage for boats to the northward of Kwale bay between Kwale island and the mainland.

LAMU AND MANDA BAYS.

VARIATION 8° 10′ West in 1878.

LAMU is the most important town northward of Mombaza, and one of the largest in the dominion of the Sultan of Zanzibar. It stands on a slight eminence round a large fort, on the western side of the harbour, 1¾ miles within the village of Shella at the south-east point of the island. The arab governor is supreme over this part of the coast.

The harbour formed between Lamu and Manda islands is long, comparatively narrow, and above Shella is much encumbered with shallow water. From the survey of Owen in 1825, the mangroves are evidently encroaching in many directions; the reef to the south-east of the town is now crowned with a mangrove island which increases in size every year. The shores at the northern end of the harbour are broken into mangrove creeks, one of which affords a passage at half tide to Manda bay.

The village of Shella is small, compact, and not seen from seaward as it is hidden by sand hills, but a weather beaten and blackened minaret shows over the slope of the hills when bearing westward of north. There are several wells in the village, from one of which good water may be obtained.

Large vessels anchor either outside the bar in Lamu bay, which is partially sheltered, or in Manda bay.*

Manda island which separates Manda bay from Lamu harbour is now uninhabited, but the size of the stone remains attest the importance of the old town that flourished on its northern shore, in the time of the Portuguese.

Lamu island.—The south shore of Lamu island is all sand, and forms a gentle sweep inwards, backed by white sand hills partly covered with scrub, ranging from 30 to 250 feet high, the latter height being near the west end, whilst the hills over the village of Shella at the east end reach 175 feet. Within the hills, the island is low, flat, and much cultivated with cocoa-nuts.

Mlango Kipuugani separates Lamu island from the mainland, and affords a good channel for boats; as much as 9 feet water is reported throughout, but there is a considerable sea at low water at the entrance in the southern monsoon, and it is impeded by a shallow bar on which the sea breaks in places.

Lamu bay is 6 miles across from Rás Kitao to Dongo Kundu, but is partially obstructed by sand banks, with 3 to 4 fathoms water on them. In the south-west monsoon a swell sets in, but during the other season there is good shelter in 4 fathoms, west of the bar, and a vessel is nearer for communicating with the town than in Manda bay. Vessels whose draught will admit crossing the bar will find secure anchorage off Shella village.

Bar.—Lamu bar is formed between the reef bordering Rás Kitao, and a shallow bank running off in a south-westerly direction from Shella point. The eastern side of the bar is rocky, the western all sand; on both sides the sea breaks at low water. The channel over the bar is straight but narrow, and carries 17 feet water, through a breadth of 160 yards. When abreast the western extreme of Rás Kitao the water deepens to 5 fathoms, which depth is carried up to the anchorage off Shella. The anchorage off Shella is more convenient than going farther up, as it is cooler and a more healthy position, and the harbour is only partially surveyed. There is often a considerable swell on the bar.*

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* *See* Admiralty chart:—Lamu and Manda bays and approaches with views, No. 668; scale, *m* = 3·07 inches.

Seymour bank is an uneven bank of sand, the least depth on it being 3 fathoms, which probably varies with the monsoons. Its north-east end is distant 1¾ miles from Rás Kitao, and its inner edge about 2 miles from the shore of Lamu island. Within the bank, there are 6 and 7 fathoms water, which gradually shoals to the shore.

Kitao knolls are coral shoals lying off Rás Kitao; the outermost patch with 2¾ fathoms water on it bears S.S.W., distant 3¼ miles from the western extreme of Rás Kitao. At a mile to the E.N.E. of this danger is the Utende rock with 1½ fathoms, on which the sea only breaks in the heaviest weather.

COAST.—On approaching Lamu from the southward, the white sand hills on Dongo Kundu are conspicuous, but those on Lamu island are still more so, the whitest hill of all being the easternmost and at the entrance to Lamu harbour.

Kanyika islet is of bare coral, 25 feet high, and lies 2¼ miles from the shore of Dongo Kundu; if shut in with Dongu Kundu it is sometimes difficult to be seen.

Manda island has a few low hills along its seaface, the lower parts of which are also of sand but of a much yellower hue than the hills of Lamu.

Rás Kitao the south-west extreme of Manda island is low, and of rock bordered by shallow water, with bush behind it. Rás Ukove the east extreme of Manda island is of low rock backed by a hill 105 feet high. This point is difficult to make out after Rás Kilindini to the north, opens to the east of it.

Tides.—It is high water on Lamu bar, full and change, at 4 hours; springs rise 10 feet, neaps 7 feet, and neaps range 3½ feet. The tidal stream over the bar is usually strong and caution should be observed in crossing it.

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* The great difference between the *Fawn's* survey and that of Captain Owen, as well as of an examination made by Nav.-Lieut. Wood of the *Diamond* in 1875, which differs from both, lead to a suspicion of change in the bar, but Captain Wharton was unable to find any confirmation of this from the local pilots and old inhabitants, who declared it was the same always, the only difference being in the amount of sand visible at low water on Shella bank, which is greater in the south-west monsoon. Nevertheless, it would be prudent to anchor off the bar, and to send a boat to sound over the line of the leading mark before entering the harbour.

Anchorage.—There is sheltered anchorage in the north-east monsoon outside the bar, in Lamu bay, in 5 fathoms, sand, with the right extreme of Shella point N.E. ¾ E., and the right tangent of Rás Kitao E. by S.

Directions.—Bring the easternmost high summit on Shella hills to bear N. 23° E. (N.N.E.), and steer for it—if a dark pillar, building in 1878, on the beach in front is completed, it will be in line, *see* view on the chart. This mark will lead in from seaward westward of the Kitao knolls, and eastward of the Seymour bank. When the right extreme of Manda island bears E. by N. ½ N., then steer N. by W. ½ W. between the bar and Seymour bank to the anchorage.

To cross the bar, continue on the leading mark (the eastern high summit of Shella hills N. 23° E.) over the bar until a small dismantled battery on the north part of Rás Kitao bears E. ¾ S., then steer in mid-channel and anchor off Shella village in 4 fathoms, sand and mud, with the minaret of Shella bearing N. ½ W., and a small battery on Shella point near the water W. by N.

Do not cross the bar at half flood, as the tide is then very strong; but enter either near the end of the flood, at high or low water, or shortly after low water. In leaving proceed out with a rising tide.

The batteries just mentioned are rude structures, and before many years will probably be covered, the one with sand, and the other with vegetation. The pillar is just above high water mark on Shella point and should show dark against the intense white of the sand hills.

The Shella sand hills are of a very loose consistence and evidently change considerably with a lapse of years, but the summit selected as a leading mark is crowned with a creeping bush which will prevent its altering. At present it forms a sharp apex from seaward.

Manda bay, at the entrance of a large mangrove lined creek, that runs many miles inland, is a magnificent harbour with deep water and room for the largest ships, but the numerous reefs and shoals off the entrance, the velocity of the tides, and the want of accurate charts has prevented it hitherto from being much used.

On the shores of the great creeks leading from the bay round Pate island are the large and important villages of Siwi or Siyu, Paza or Faza, and others. The great creeks which extend inland from Manda bay have only been partially explored; they are not fed by any large river, and the navigation of them appears intricate.

The Coast of Manda island from Rás Kitao forms a convex curve for 3 miles eastward to Rás Taka; these points are similar in character. Between the points and the off-lying shoals there are from 8 to 4 fathoms water. Rás Ulkove, the eastern point of Manda island bears N.E. 3½ miles from Rás Taka, the coast between is backed by low hills averaging 100 feet in height, and which are conspicuous from seaward. Rás Ulkove is a low rocky point, and the reef called Mwamba Tawangu stretches off it to the eastward 1¼ miles, the sea breaks on the southern extremity of this reef, but its eastern edge for 1½ miles to the northward is not defined.

Rás Kilindini the north-east point of Manda island, and 2¼ miles N.N.W. of Rás Ulkove, is of low sand, but has some tall casuarina trees along its beach at the extremity which show black.

Pesgrave bank is a large coral shoal lying off Rás Taka in a north-east and south-west direction over a space of $2\frac{6}{10}$ miles. There is mostly from 4 to 6 fathoms water on it, but there are two patches with 3 fathoms. From a depth of 4¼ fathoms at its north-east end Rás Taka bears W. ¼ S. distant 2¾ miles, and from the tail of the south-west end the same point bears N.N.W. ½ W. 2 miles.

Mchangamneni, is a coral shoal 1½ miles in length, inside Pesgrave bank. The shoal has from 1½ to 4 fathoms on it, and from the shoalest part, which is about a third of a mile from the north-east end, Rás Taka bears W.N.W. distant 1⅓ miles.

Neither of these banks show in any way unless close to them.

Vidal bank extends over a space of nearly 3½ miles in an N.E. by E. ½ E. and S.W. by W. ½ W. direction. It lies on the edge of the deep water at the entrance to Manda-bay, and has a known depth of from 2¾ to 5 fathoms over it; but as the bottom is very uneven, there may be other shoal patches than those marked on the charts. On the Vidal bank, the water is always clear, but it does not otherwise show.

The space between the Pesgrave and Vidal banks on the south, and the shoals bordering the entrance to Manda bay on the north, is called Manda roads. There are two entrances into the road; one to the westward of Vidal bank, the other to the eastward and north of the bank.

Mwamba Hanawi is a coral reef awash 1½ miles northward of the Vidal bank; it is surrounded by a considerable area of shallow water, and the sea generally breaks at all times of the tide. The passage to the northward of Mwamba Hanawi between it and the shore reef is useless for navigation.

Muhaji channel between Pesgrave and Vidal banks is 1¾ miles wide, and is used by vessels from the southward. A ridge with 6 fathoms water on it connects the two banks.

Barracouta channel, between the Vidal bank and Mwamba Hanawi, carries deep water throughout, and is the best passage for a vessel coming from the northward.

Manda Toto is an island mainly of mangroves, and stands on the north-east part of the reef extending from the shore between Rás Ukove and Rás Kilindini. The trees on it are about 35 feet high, fairly conspicuous, and the east shore of the island is rocky. The north-east point is in lat. 2° 13′ 35″ S., long. 40° 59′ 40″ E.

Pate island is nearly entirely fringed with mangroves, but has a central plateau of raised coral, is cultivated principally in cocoa nuts, and about 50 feet high. It is quite featureless, the tops of the trees forming one uniform line is all that is visible from seaward. The island has a large population mostly inhabiting villages on its eastern end, where a great deal of mtepe (a kind of dhow) building is carried on. The town of Pate, whose solid remains attest its former importance, is nearly entirely deserted, most probably on account of the creeks by which it is approached becoming entirely blocked up. The only approach to it now is from seaward at the highest tides, or by a swampy walk from the head of a small creek west of the town.

The mangroves of the south-western end of Pate island have increased to an enormous extent since Owen's survey, and the clumps of these trees then detached from the shore, are now all joined to the main island. Change may therefore be expected about Rás Changoni and the mangrove islands to the north-west.

To the eastward of Pazarli and Pate island, the coast is featureless as far as the peak of Kwyhu, which is 155 feet high, and the only conical hill near, though there are several rounded summits on Kwyhu island. The peak is a good landmark from the northward.

Mwamba Kwiyeye stretches to the south-east 3 miles from Rás Chongoni, and forms the eastern side of the channel into Manda bay. The edge of this danger is much broken, and the reef itself rarely dries except in patches at springs.

The Pazarli rocks or islets are several large masses of elevated (35 feet high) coral, lying on the eastern edge of Mwamba Kwiyeye; they can nearly always be seen, and the easternmost is the highest.

Iwe-la-Manda is an isolated mass of coral, 25 feet high, on the western or channel side of Mwamba Kwiyeye, and at times is difficult to distinguish against the back ground of trees. From Iwe-la-Manda, a chain of flat rocks which dry at half tide extend in the direction of Manda Toto island nearly into the narrows.

Channel.—The channel into Manda bay is between the reefs extending from Manda and Manda Toto islands, on the west, and Gordon reefs and those extending from Rás Chongoni on the east and north-east.

Clark patch is a small knoll with 4¾ fathoms on it, and lies at the entrance of the channel with Rás Ukove bearing W. ½ N. distant 2 miles.

Gordon reefs with only 2 fathoms water on them, are of coral and lie along the eastern side of the channel off Mwamba Kwiyeye, they do not show.

The sea breaks on the southern extremity of Mwamba Tawangu, but its eastern edge for 1½ miles to the northward is not defined.

Farther in the edges of the reefs on both sides are tolerably steep-to, and at low water fairly defined, but too much confidence must not be placed in this as the water at times is much discoloured.

The point of the sandbank extending northward from Manda Toto island is steep-to, but owing to the bubble of the sea caused by the tide it cannot be seen.

Chaka Mzungu and the islets to the northward of it are merely clumps of mangroves on the reef of Pate island; they form a good mark at present for passing through the narrows.

Caution.—The velocity of the tides at springs in the narrows of Manda bay is exceedingly rapid, and at neaps considerable. With adverse winds it is at times unsafe for boats. No stranger should enter the channel on the flood. The tides are the same as at Lamu.

Anchorage.—The best anchorage in Manda bay is off Kilindini creek, in 6 fathoms water, with the left extreme of Manda Toto island S.E. ½ S., and the sandy point at the entrance of the creek S.W. ½ S.

There is good landing at the entrance of Kilindini creek, and the plains of Manda island at certain times of the year abound with partridges, antelope, &c.

Directions.—To enter by the Muhaji channel, bring the right extreme of Manda Toto island on with the left extreme of Chindikasi islet N. by W. ¾ W., and steer in on this line until over the ridge with 6 fathoms water on it, connecting Presgrave and Vidal banks, which will be known by the water deepening. Then steer N. by E. until Mark islet is open between the other islets: the left extreme of Mark islet kept just clear to the right of the right extreme of Chaka Mzungu islet bearing N.N.W. ⅜ W. (N. 26° W.), *see* view on chart, will lead to the narrows between Manda Toto and Mwamba Kwiyeye: when Iwe-la-Manda bears E. by S. ½ S., steer W. by N. ½ N. and anchor off the entrance to Kilindini creek.

To enter by the Barracouta channel, bring the Shella hills over the lowest part of a dip in the Manda hills bearing W. ⅜ S. (S. 86° W.) *see* view, and steer in until Mark islet is open, and proceed as above.

KISIMAYU BAY.

VARIATION 6° 50′ WEST IN 1878.

KISIMAYU BAY (Refuge bay) the northernmost anchorage on the east coast of Africa, which can be called a harbour, is better than any other at present known between it and Manda bay, and for this reason will always be valuable as a port of refuge for vessels of war cruising on this part of the coast, but otherwise it will be of little importance until trade with the interior increases by way of Juba.*

On the northern shore of the bay is a small Somali village of most indifferent huts, also a large white square arab fort, which serves as the head quarters of a guard, and of the governor who represents the authority of the Sultan of Zanzibar. A small trade in hides and ghee passes through the village, but the actual trading place for this part of the coast is at the mouth of the Juba river, where there is a much larger settlement, of which Kisimayu is, to some extent, the port, the dangerous bar of the Juba river preventing much communication with the sea.

Coast.—The land about Kisimayu is undulating and in no way remarkable, and haze often obscures it and renders identification of the few landmarks difficult. The soil is sandy and covered with grass, low bushes, and umbrella-like mimosa trees and scrub. To the northward of the Juba the coast appears much more sandy and bare than to the southward. The hills westward of Blanket point are not remarkable, but appear as an undulating ridge. Round hill only shows round when bearing southward of West, but at no time is it very conspicuous. Wooded peak is more serrated than the other eminences. At the mouth of the Juba is a rounded bluff with denser bush on it than elsewhere, which serves as a mark, though not a good one.

Murder hill is a small conical eminence, no higher than the adjoining plateau, but it is separated on either side by a distinct dip, and is remarkable by its shape. The best view of it is on about a north-west bearing.

Mtanga ya Papa.—This small island at the south end of Kisimayu bay is 45 feet high, but difficult in some lights to be seen, though with any haze it appears prominently forward.

Fawatu islet.—This small islet or rock, 13 feet high, has a well-built white beacon on it.

Kisimayu island is 85 feet high, and appears a reddish yellow compared with the land behind which is mostly green, with white sandy spots. There is a small dome-like projection at the south end of Kisimayu joined by a low rocky neck to the main island. The neck is in lat. 0° 23′ 6″ S., long. 42° 33′ 31″ E.

Mears tomb as seen from the north-west appears double, as there is a low dip in its centre. It is 40 feet high, and shows very green after rain.

North Mears is a bare black looking rock 28 feet high.

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* *See* Admiralty chart:—Kisimayu bay (Refuge bay), with views, No. 860; scale, *m* = 2 inches.

Pillar rock, near the shore in the north-west part of the bay is a sail-like rock, 48 feet high, and generally shows dark against the land behind. It is an unmistakeable mark, and at times can be seen from outside.

OUTER REEFS.—The entrance to Kisimayu bay is barred by a succession of outer reefs and shoal patches; the outermost or Owen barrier being in the form of a narrow coral chain running parallel to the shore at a distance of about 2½ miles, with from 2½ to 6 fathoms water on it, and is apparently continuous to the southward, but to the northward it terminates a short distance north of Kisimayu. To the south-west of Middle reef the bottom is very uneven and rocky. There are many openings through the barrier, but as there is always a heavy swell, not even the smallest vessel should risk passing through, unless the leading marks can be clearly seen.

The routes given are the only passages closely sounded; elsewhere there may be shoaler patches than those marked on the chart. The water is thick, especially during the north-east monsoon, when the water from the Juba river discolours the sea for some miles.

Winds and Currents.—The alternate monsoons are strong all along this part of the coast and carry the currents with them. From November to April the northerly winds prevail with a southerly current, being at its strongest in January and February; during the other months of the year the winds and currents are reversed. Both are variable in their force and velocity, but the direction is nearly that of the trend of the coast.

The northerly current hugs the shore rather closer than the southerly current. The mail steamers when bound southward against the monsoon, keep well off the land to avoid the main strength of it; but going north against the monsoon keep as close to the outlying reefs as they dare, in order to be in smoother water and less current.

Along the Juba islands, however, the *Fawn* in December had the southerly current running strong along the edge of the reef, and off Kisimaya it passes inside Owen barrier and sweeps along the shores of the outlying islands.

Caution.—It must be borne in mind when entering Kisimayu bay, that the direction of the current in either monsoon will be on the beam, and a vessel should be steered well to windward, so as to maintain the line of the leading mark, and even through the Inner pass.

Fawn pass.—From the southward, the Fawn pass is the nearest into Kisimayu bay. This pass is over Owen barrier in 5½ fathoms water, and north of the Middle reef in 5 fathoms, between it and a four-fathom patch.

Bring the white fort in the bay over the neck at the south end of Kisimayu island N. 15° W. (N. by W. ¾ W.) *see* view *a* on chart, and steer for it. This is an excellent mark and easily seen, but it must be closely adhered to, and any deviation on either side will be known by shutting in the fort.

It is recommended to bring the mark on at some distance outside Owen barrier, so as to observe the effect of the current before crossing the barrier. The current inside the barrier is frequently as strong as outside, but at times it slackens. If the current is strong and much difficulty is found in keeping the leading mark on, a vessel after passing Owen barrier, which will be known by the lead, can be kept to the northward and steered in with the mark for Knotts pass, which does not lead so close to the Middle reef.

Continue on the above course N. 15° W. until the pillar on Fawatu islet is in line with Pillar rock; then alter course to W. by S. ¼ S. for the entrance of Inner pass.

Inner pass.—This pass, within the outer dangers, leads into the bay to the southward of Fawatu islet and between it and the north end of a long 3 and 5 fathom bank, which stretches across the whole bay in the line of the islands. This pass must be used by which ever route a vessel has crossed the outer dangers.

To enter the Inner pass, bring Pillar rock in line with a white column on the north slope of Mark hill to bear N. 30° W., which leads through the pass in 5½ fathoms, to the centre of the bay; the current often runs strong across the Inner pass; the danger is on Fawatu islet side.

Anchorages.—There is sheltered anchorage at either end of the bay according to the monsoon, but in both corners a long swell generally fetches home through the passage and over the shallows, which as the vessel will be broadside on, causes her to roll. From 20 to 24 feet water, with a muddy sandy bottom, will be the best berths at both anchorages.

If going to the north end of the bay, when Fawatu pillar bears N.E. by E. ½ E., steer N.N.E. ½ E. with the fort a little on the port bow, and anchor in 3½ fathoms sand and mud, with the south extreme of Kisimayu island S.E. by E., and the fort N. by E. ¾ E.

The south end of the bay is the best berth in the height of the southerly monsoon. To proceed to this anchorage steer through the Inner pass until the right extreme of Green island bears S. 42° W. (S.W. ¼ S.), when four small islets or rocks will be open between the mainland about Blanket point and Green island (not counting Wills rock, which is close inshore and apparently barely clear of the point). Smyth islet, the northernmost and nearest of the four, just touching the right extreme of Green island, *see* view *d* on chart, will lead down eastward of Fred rock until Nyuni islet closes to within twice its own breadth of Mtanga ya Papa, then steer West, and anchor in 3¾ fathoms, sand, with the north extreme of Mtanga ya Papa and Green island in one S. 41° E., and a piece of rocky cliff near Blanket point S. 38° W.

Knotts pass is also safe, and the depth of water in this route gives more room for any deviation that may occur from the direct line, but the marks are not nearly so good from outside the reefs as those for the Fawn pass. Knotts pass is over the barrier in 5 fathoms water, and southward of the Dædalus knoll.

To enter by this pass, bring the south end of Fawatu islet on with the white column on the north slope of Mark hill N. 53° W. N.W. ¾ W. and steer for it; when Kisimayu fort is open of the dome or hummock at the south end of Kisimaya island, steer W. by S. ¼ S. for the entrance of the Inner pass and proceed as before.

Zig Zag pass, the great natural entrance has no leading marks and cannot therefore be used. Its proximity to the Dædalus knoll makes good marks a necessity.

North channel leads round the north end of Owen barrier, and is the nearest way in from the northward. With a heavy sea, much wind and current, this is the best passage for a large ship, as the water is deep and there is abundance of room.

To enter by the north channel, bring Mears tomb to bear W. ½ N. and steer for it; when the right extreme of Kisimayu island is in line with round hill S. 74° W. (W. by S. ¾ S.) keep this mark on (which also leads straight in from seaward if coming from the north) until Mears tomb bears N. by W. ¼ W.; then alter course to S. 52° W. (S.W. ⅝ W.) with Mtanga ya Papa right ahead, which will lead up to the entrance of the Inner pass.

In this route cross bearings should be frequently taken, as Mtanga ya Papa is too distant to serve as a good mark with a bearing only, and the current may not be in the direction of the course.

Outward route.—In leaving Kisimayu bay, there will be no difficulty in reversing the routes in. From the north end of the bay, bring the northern and nearest of the four islets southward of Blanket point and before mentioned, just touching the right extreme of Green island, which will lead down to the mark for the Inner pass.

In going out of the Inner pass, the helm can be put to starboard as soon as North Mears rock is well clear of Kisimaya island, and a course steered East to gain the marks for Fawn pass, or for a point eastward of Mears tomb if going out by the north channel.

Supplies.—The water at Kisimayu is obtained from wells and is scarce and bad. Bullocks, sheep, and goats can easily be procured, but no vegetables. At times large game is found close to Kisimayu, but Somalis roam in large numbers in the vicinity, and are not to be trusted.

Tides.—It is high water, full and change, at Kisimayu bay, at 4h. 0m.; springs rise 10 feet, neaps 6 feet, and range 2 feet. The tides however are variable and probably much affected by the winds and currents.

Information relating to the coast between East London and Bashee river, by Navigating Lieutenant C. R. H. Robinson, H.M.S. *Active* 1877.

VARIATION between East London and Bashee river, 29° 20′ West in 1878.

Current.—Between cape Agulhas and East London, in the month of October, an easterly current was experienced along shore at the rate of a mile an hour.

In returning to Simons bay, the current on the edge of the bank was very strong southward of cape Recife, running for eight hours nearly 5 miles an hour; but it slackened on the edge of the bank on approaching cape Agulhas to three-quarters of a mile.

Off cape Agulhas passed through immense fields of *Zoophores.* In a calm an extraordinary mirage had the effect of transforming vessels into the most peculiar shapes and positions. Temperature of the air 69°, and sea 62°.

East London. — The *Active* anchorged at East London in 11 fathoms, with Cove rock just shut in with Hood point bearing S. 87° W., lighthouse N. 64° W., and Kahoon point N. 61° E. This is a good berth with westerly winds, being clear of the merchant vessels, but too close in for a south-easter. The vessel with her head to the south-west rode easily with 80 fathoms of cable. The bar appeared dangerous, but was reported passable, and troops, horses, and baggage were landed in three hours.*

The COAST between East London and Bashee river is every where fringed with rocks and a heavy surf; few places offer any chance of successful landing even in the most favourable weather. At Gonubie point, on the south-west side of the bight, landing might apparently be effected.

The most remarkable features on this part of the coast, and by which it may be recognised either in shore or the offing, are, the Cove rock, westward of East London, the remarkable peak eastward of Gonubie river, cape Morgan from the south-west and westward by the high perpendicular cliffs (which show very plainly between Ikuko and Sklagha rivers), and from the eastward by the Kei Kop hill and Snag rocks, Sandy point by the sand hills, Mazeppa bay by the remarkable sand hill, and the coast near the Bashee river by the Udwessa cliffs.

Fish may be obtained along the coast but only on rocky ground.

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* *See* Admiralty Chart:—Waterloo bay to Bashee river, No. 2086; scale $m = 0\cdot3$ inches; and plan of Buffalo river with views, No. 1843, scale, $m = 5\cdot9$ inches.

Cape Morgan.—There is good shelter from north-west and westerly winds from a half to three-quarters of a mile eastward of the cape, and the same distance from the shore. Here, under favourable circumstances, landing might be effected.

Kei River.—A continued confused line of breakers forbid any attempt to land or enter the river, but at 1½ miles eastward in the first sandy bay, and also at the beach near the Kologha river, landing might be effected under favourable circumstances in surf boats.

From the Kologha river to Sandy point the shore is rocky, and although sandy patches appear at some of the rivers, the beach hills with few exceptions would make transport very difficult; a heavy surf is continuous throughout.

Bowkers Bay.—The coast between Sandy point and Stony point is known to the colonists as Bowkers bay. The *Active* found good anchorage, with shelter from westerly winds, in 10½ fathoms, sandy bottom, one mile from the shore, off a small river closed by a sand bank.

On the above bank and the beach adjacent (at the foot of a remarkable sandy hill), landing was effected in a whale boat manned by experienced boatmen from port Elizabeth.

From the anchorage Sandy point bore S. 66° W., extreme of the bay N. 48° E., and Mazeppa point N. 70° E. This appears to be the best anchorage on this part of the coast, and is certainly the safest place for landing. The examination of the bay was made under favourable circumstances; the surf broke in 3 fathoms abreast the landing place.

Mazeppa Bay.—The only place where landing might be attempted is under the sand hill, but great difficulty would be experienced in conveying goods from this place; the surf always appeared to break heavily. The coast between Mazeppa bay and Bashee river is foul, with a heavy surf. The *Active* anchored and attempted to land off the mouth of a river 1½ miles eastward of the Juju river. The surf and shore looked favourable, but proved too dangerous for landing.

Bashee River.—The *Active* anchored several times off the mouth of this river. A good berth is in 10½ fathoms, sandy bottom, commanding the right bank of the river, with Amendu point S. 72° W., Bashee point N. 67° E., and the west head of the river N. 40° W. The rollers generally set in heavily after a strong westerly or south-westerly breeze, occasionally breaking in 6 or 7 fathoms, but generally off the mouth of the river in 3½ or 4 fathoms.

The landing is dangerous as the breakers are confused. The sand spits which extend from either head now overlap each other, that from the eastern head being outside, leaving a channel about 50 feet wide with a depth of 3 feet at low water, but at no time would it have been possible for a small vessel to have entered the river. High water at full and change about 4h. 0m.

Landing was first made on the eastern spit in a whale boat, but the attempt to get off proving ineffectual, the boat was carried 1½ miles to the westward to a sandy beach close to a small river, closed by a sand ridge, from which place, with great difficulty, the crew succeeded in returning to ship. On a second occasion in attempting to land the boat was capsized (apparently over rocky ground), one life was lost, the remainder of the the crew reached the shore with difficulty. Several attempts were made to return to the ship but without success, and the crew had to go to East London.

Caution.—Before attempting to land on this beach, which is about 200 yards in length, and three-quarters of a mile north of Amendu point, the direction of the current outside the edge of the surf should be ascertained so as to avoid being set over the rocky ground which evidently extends from the shore on either side of the sandy beach. The rollers occasionally without warning break heavily a considerable distance outside the usual line of breakers.

Current.—The current invariably ran to the westward at all the anchorages between East London and Bashee river, so that with south-westerly winds, which certainly causes the heaviest rollers, vessels with a good scope of cable ride easily.

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